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BY HENRY R. KENWOOD, M.B. EDIN., D.P.H., F.R.S.E.,

TEMPORARY LIEUTENANT-COLONEL, ROYAL ARMY MEDICAL CORPS; CHADWICK PROFESSOR OF HYGIENE AND PUBLIC HEALTH IN THE UNIVERSITY OF LONDON.

SURGEON-GENERAL RUSSELL, LADIES, AND GENTLEMEN,—It may be asked, "What have war and hygiene in common, seeing that the aim of one is to conserve human life and that of the other is to destroy it?" The answer is that warfare is dependent upon healthy human material, and that its lessons have often prepared the way to hygienic progress in civil communities. Sir Alfred Keogh has directed our attention to notable instances of the connexion between sanitation and efficiency in war, and to the fact that the absence of sanitation has wrecked armies. Therefore Hygiene enters the field with Mars, and she is amply proving the value of her services in the present supreme test. The war will repay her for these services if the lessons it has taught the nation are not disregarded.

One gratifying lesson of the war is that civilisation, in bringing refinement and increased sensibility, has robbed us of nothing which had true power and nobility in the earlier days of our development; that man stands in no need of warfare for the development of his nobler traits—he need not be brutal in order to be brave. That the virtues called forth in war will die out if there is no war is the shallow and false philosophy of a German professor ignorant of human nature. It is conceivable that such virtues might become attenuated in a population which had to sustain no fight for a living and to meet no family calls for self-sacrifice and devotion to ideals, but no such population exists; and surely it takes the German mind to doubt whether there can be sufficient scope for the exercise of such virtues in times of peace. A very large proportion of those who are at present fighting had never previously contemplated even the possibility of active participation in warfare, yet such have not shown any less self-sacrifice or valour than the war-imbued Germans. Nevertheless, military discipline and a soldier's training are good for every young man, and for this reason alone I would vote for a compulsory period of military training in this country. Surely the war by bringing so many men under military discipline and by calling for great sacrifices for a high purpose will prove a real national asset in that it must make the population more amenable to the forces of moral discipline. Should this prove to be the case, the art of hygiene, itself a form of moral discipline, will be advanced, and some good should flow to the community from the horrors of war

MAINTENANCE OF AN EFFICIENT POPULATION.

War involves a serious qualitative as well as quantitative loss to the nation. It is not as the storm that cleanses, but as the whirlwind that devastates. War is less dysgenic than venereal disease and the abuse of alcohol—the two great factors in racial degeneration that lay *both* sexes so gravely under contribution. That Britain has proved capable of maintaining her good stock despite great impoverishments of her most virile manhood is abundantly shown in the record of our isles. To mention one notable instance: the manhood of the country was already seriously drained by the long wars of Edward III when the Black Death ravaged the country with even more terrible consequences; for it claimed a heavy toll of *both* sexes, discriminating but little between the weak and the strong. Yet the subsequent history of our nation does not indicate that the consequences were of a lasting nature. While from the public health standpoint, we now enjoy advantages as compared with the population of those earlier days which should favour our regeneration of stock, it must be borne in mind that these advantages are accompanied by certain modern circumstances that are adverse to child-life, such as a low (and falling) birth-rate and a considerable increase in "urbanisation" and artificial feeding

Our losses must tell heavily upon our declining birth-rate. A deep shadow will fall upon the life-paths of the many who have lost an only son when there might have been others. They have learnt too late the lesson of the mistake of the small family. Will such evident shadows do something to impress the lesson upon others that the late marriage (so often childless) and the limitation of offspring to one or two, discount both the happiness of the home and our national well-being? Will they have an effect in leading young men and women to think more deeply and to look further ahead in these matters?

An efficient population is an essential factor in the strength of a community which has to face competition, be it in war or in peace; and so the nation has the great duty to perform of building up again as quickly as possible its human capital. This duty is dictated not only from national and patriotic motives, not only from considerations of social well-being and happiness, but also by the natural desire of a Christian country to do what is possible to ensure that human offspring shall grow up into healthy and happy citizens. France has long seen her peril in her low birth-rate, and it was that country which took the initiative in special efforts for conserving infant life. This need has been so much taken to heart during the war that the result is an event which is *unique* in history—the rate of infant mortality has actually fallen while France has been fighting an enemy within her gates. And so with us, the physical welfare of our child-life at the present time must be regarded as of even greater importance than formerly; and it is to the credit of all concerned that we have during the past two years made a great advance in the permanent provisions for the conservation of child-life in this country. Prominent amongst these is the organised effort to cope with the national losses from measles. Everyone is agreed that the ignorance which sacrificed so many children before the war has got to be replaced by knowledge if this great national loss is going to be stemmed. But let us not imagine for one moment that this is easy, nor that our partial child-welfare schemes will suffice. The *home circumstances* of the poorer section of the community are responsible for a reduction both of our birth-rate and of those births which attain to efficient and worthy citizenship. From this and other standpoints it is impossible to exaggerate the importance of better housing. Again, maternal welfare during the last few months of pregnancy is an essential part of infant welfare; and the greatest enemy to intra- and extra-uterine infant life is the poverty that cuts short the necessary supply of food, clothing, and fuel during the critical period of the expectant and nursing mother. Now despite all that can be done by public charitable agencies, there is a considerable residuum of necessitous mothers and infants whose poverty often defies and defeats our objects. It should be the local concern *everywhere* to see that this matter also is seriously attended to A fund to assist the local authority in a properly safeguarded scheme to this end should be subscribed to by rich and poor alike as the expression of gratitude for a victorious peace, and to the men who in every locality have laid down their lives to secure it; and our women who have done so much to provide comforts for our soldiers will not fail to maintain such good work for the needs of mothers and infants if a suitable appeal is made I cannot conceive of any memorial of greater national value nor one more appropriate to the soldier-father and soldier-son, seeing that it aims at a sympathetic provision for the well-being of necessitous mothers and offspring.

ANTITYPHOID INOCULATION.

During the war the principle of adjusting man to his environment when it is difficult to adjust the environment to man has been applied in the protective inoculation against "the great enemy of armies"—typhoid fever. The fact that the rate of typhoid mortality in London is considerably below that for England and Wales generally, proves that a large concentration of population may enjoy great freedom from this disease under the protection of good sanitary circumstances. But it is inevitable that sanitary precautions

[1] A note on the part of this address dealing with Army Sanitation was published in THE LANCET of Nov. 25th, p. 922.

must be imperfect under active service conditions, despite the excellent work of sanitation which the Army achieves in most difficult circumstances. Indeed, there may be times when sanitary provisions are almost lacking. This was the case during the rapid retirement from Mons, when even water-carts were often destroyed or abandoned; and during the fighting in the trenches at the Aisne there was little time or opportunity for sanitation. Moreover, typhoid fever is endemic each autumn in some areas which have been occupied by our troops and where the sanitation of billeted villages has been indifferent. In the above circumstances the consequences would have been disastrous if there had been neglect in providing the protection afforded by a considerable measure of antityphoid inoculations.

It will be recalled that the United States troops had a terrible experience of this disease in the Spanish-American War of 1898. In six months among 107,973 officers and men 20,738—practically one-fifth of the entire force—had typhoid fever. In South Africa there were 57,684 cases of this disease, of which over 8000 died. Now what about the great war and the British Armies on the Western Front? There have only been scattered cases of typhoid fever and a very occasional small group of cases in different units. The triumph in disease prevention which this represents is further impressed by the fact that (calculating from the available data up to the end of 1915) the deaths among our troops *under active service conditions* furnish a death-rate from typhoid fever which is actually slightly below that of the male civil population of similar ages and for the same period in England and Wales. "The great enemy of armies" has been reduced to impotence by vaccination.

The experience in the present war brings out the fact that the non-inoculated British soldier is very much more liable to catch typhoid fever than is the inoculated soldier; and that when both catch the disease the non-inoculated soldier is between three and four times more liable to die from it. I learn that a like comparison in respect to the French Army is similarly favourable to inoculation, and in the German Army it is authoritatively stated that the number of cases of typhoid fell at once when inoculation was carried out. By the end of 1915 all the armies of the Central Powers were inoculated against typhoid fever.

Thus antityphoid inoculation has proved its value. It saves human life; the severity of attack is generally much lessened; it confers a greater freedom from relapses and complications; convalescence is more rapid; probably the proportion of "carrier cases" is reduced; and even after infection has been contracted, if inoculation is performed early, it reduces the virulence of the attack. Does not this successful application of a scientific measure for protecting soldiers from typhoid fever suggest the lesson of its wider application to those civilians who dwell in endemic areas or are judged to have run serious risk of infection?

COMPLETENESS OF PREVENTIVE MEASURES.

I wish that the time permitted me to detail the unprecedentedly complete measures taken by the army in the field and on the lines of communication—unprecedented even in civil practice in times of peace. The preventive inoculations performed; the work of diagnosis by Widal and blood-culture tests; the search work for carriers, even undertaken in motor bacteriological laboratories which can be taken nearer the front than the hospital or municipal laboratories are situated; the special hospitals established for the reception of typhoid cases; the system of inter-divisional notification and the protective inoculation of even civil contacts in areas occupied by our troops, &c. I can only say that it is all very impressive in its unprecedented completeness and efficiency, even to one who has spent his life in the civil work of preventive medicine; and I would add, deliberately, that if all these army measures were applied to the civil population the small and rapidly diminishing part which typhoid fever contributes to our general death-rate would in the near future be reduced almost to vanishing point.

To allow convalescents from typhoid fever, paratyphoid fevers A and B, and dysentery to mingle with the general population without taking suitable precautions would be dangerous, for in each disease a small proportion of the sufferers who have apparently quite recovered may still harbour, and occasionally discharge, the infective organism. They may be "carriers" of infection, though no longer sufferers from it; and the military authorities, realising this danger, have taken measures of a precautionary nature that must be regarded as liberal.

It is not easy to assess the effect of such carriers in the dissemination of disease, for the "missed cases" may cloak their influence, but there are considerations and facts which call for a moderate estimate. Generally speaking, the germs of carriers are leading a kind of saprophytic existence, and therefore are not so infective as those associated with the acute disease. Moreover, it does not seem likely that the chronic "carrier" can be responsible for much of "the unexplained residue" of typhoid infection in civil communities, seeing that careful inquiries rarely furnish evidence of secondary cases, after an interval, in the families of previous sufferers. Such limited samplings as have been made of general populations abroad to determine what percentages are carriers have yielded results which must greatly exaggerate the facts in this country, where on a very liberal estimate they could hardly exceed 50 per 1,000,000 of population. But we must adopt the cautious view that carrier infection is always a real danger to guard against; and there have been many recorded instances where carriers engaged in the preparation of food for others have, in this indirect way, transmitted the infection of typhoid fever. What is *most* desirable is that all convalescents from typhoid and dysentery should be specially instructed and trained to observe a high standard of personal hygiene before their discharge from hospital, for their dissemination of infection depends mainly on defective personal hygiene.

THE DRINK PROBLEM.

Foremost among the sociological questions which the war has forced upon public opinion is the drink problem. Generally speaking, great restrictions have been placed upon the sale of intoxicants since the war began with the result of a considerable reduction in drunkenness and crime and our public-houses have become much better places of real refreshment. The available returns show that since the Central Control Board restricted the facilities for the consumption of alcohol the convictions for drunkenness in England have fallen between 40 and 50 per cent. If, with the facts before them, Great Britain, Russia, and France relax after the war the restrictions upon the sale of alcohol, vodka, and absinthe, then, indeed, must we despair of social progress. All political parties must combine in an effort to perpetuate the good effected, no particular party should be penalised by loss of votes by such action. All parties after war broke out combined against the common enemy, Germany; is it too much to hope that when peace comes all parties will combine against this even greater adversary?

There is a story told of a physician who had evolved a sovereign remedy which he dispensed himself in the form of a pill. On one occasion he was surprised (and maybe gratified) at the extraordinary demand for these pills by one household. On going into the matter, however, he discovered that this extraordinary demand was to be attributed to the fact that the pills in question exactly fitted an air-gun which was the much-prized possession of a youthful scion of the family. Sir, wise physicians have evolved sovereign remedies for several social evils during the war; are these destined to meet no better fate than expended ammunition from the pop-guns of party politics?

Speaking as one whose public duties as a medical officer of health have, for 25 years, brought him in close touch with all classes of the community, I affirm, with a conviction that is absolute, that there is no one factor of social evil which approaches to the abuse of alcohol in its dire effects upon human health, energy, and happiness. The war has impressed the lesson that much of the evil lies easily within our own control, and that this great source of national weakness in our empire may now be stemmed for all time. After the war our people will surely realise a better sense of values in living, and this will doubtless make them even more amenable than formerly to control for their well-being. It has been argued by the superficial economist that the State needs the revenue which it derives from alcohol; but it is a fact that every nation is a great loser by its unrestricted sale. Russia, wanting national vigour and money, had the wit to see that both were to be obtained by the prohibition of vodka; and I am informed that the result has been that industrial efficiency has increased over 20 per cent., and the

saving power of the people has grown from shillings to pounds.

VENEREAL DISEASE.

Alcoholic abuse and venereal disease are the two great twin evils responsible for social inefficiency and degeneracy. What lesson has the war impressed upon us with reference to the latter? The Royal Commissioners deliberately issued their Report during the progress of the great war, and the Government at once demanded a national effort to cope with this evil; yet it is probable that the anti-venereal campaign, long since overdue, would have been still further postponed had not the circumstances of the war widely impressed the lesson of its need. The subject is admittedly a difficult one, and our lack of courage to grapple with the problem in the past has not made it easier; but there can be no doubt whatever that the organisation of scientific measures against venereal disease will quickly lead to a great reduction in the loss and misery it entails. To quote the Royal Commission: "Now and in the years to come the question of public health must be a matter of paramount national importance; and no short-sighted parsimony should be permitted to stand in the way of all means that science can suggest and organisation can supply for guarding the present and future generations, upon which the restoration of national prosperity must depend." The particular measures which meet with official approval, in the meantime, are: 1. The provision of facilities for modern methods of diagnosis and treatment free to both sexes, under conditions to which no stigma will attach and professional secrecy will be maintained. I believe that if the scheme ended here the results would be meagre; but this provision is to be combined with efforts which strike at the root of the evil—namely: 2. An educational campaign to inculcate a higher moral sense among the people, to spread the knowledge of the prevalence and ravages of these diseases, and to impress the necessity for the most prompt and skilled medical treatment. Indeed, education is an essential weapon in any modern campaign of public health. Every case brought under proper treatment is a focus of infection neutralised. Is it too much to expect that those soldiers who have shown signs of such disease during the war shall be suitably examined before discharge; and, if found to be suffering from venereal disease *in a contagious form*, shall be detained until they are no longer a possible source of danger?

The war has furnished many impressive instances of the value of applied science in warfare. Will this circumstance lead to a wider recognition of its claims in times of peace, not only to industry but also to public health? For instance, the prompt and most efficient treatment of venereal disease is a preventive measure of prime importance; we have learnt much in recent years as to the most scientific means of such treatment; when these are made available to the population at large are the people still to be allowed to be tinkered by unqualified persons? Is this situation also going to be handled with courage?

INDUSTRIAL FATIGUE.

I would remind you of another sphere in which applied science offers a rich reward. In the sphere of industry, hygiene has already achieved some of its most notable triumphs in the reduction of preventable disease; but war has led to the direction of public attention to a further lesson which the hygienist has often sought to impress. I refer to the findings of the committee appointed to consider and advise on questions of industrial fatigue as affecting the personal health and physical efficiency of workers in munition factories and workshops. The accumulative effects of industrial fatigue not only damage the general health (this is reflected in sickness returns), they are also responsible for lost time and an unsatisfactory quality and quantity of work performed. As the more scientific organisation of industrial energy, in conformity with the physiological laws of life, is capable of raising the standard both of the workers' health and of his output, the importance of scientifically adapting the hours of labour to different kinds and circumstances of work cannot be denied. Now that there are plenty of actual working experiments and observations to support these conclusions of science, will employers of labour generally assimilate the fact (and profit by it) that the complicated human mechanism has its optimum conditions of work and that it is foolish and wasteful to ignore them?

CATARRHAL AFFECTIONS AND CEREBRO-SPINAL FEVER.

Another lesson of the war is that we have succeeded so little in impressing the importance of fresh air, by night as well as day, upon the masses that an open window at night is generally regarded with aversion by most army recruits, no matter whether they be town or country born; and unless after entering the army they are suitably trained they will allow the air of the huts at night to become, to put it mildly, enervating. The result is the nemesis of an excessive rate of sickness from catarrhal conditions of throat and lungs, from which the better-trained occupants of well-ventilated huts enjoy a marked comparative freedom, and the spread of infectious disease, including catarrh, influenza, lobar pneumonia, &c., is favoured.

The present allowance of 40 sq. ft. of floor space per man is ample, provided a sufficient number of windows (the only really effective means of ventilation in fully occupied huts) are kept open. The Army Council's action in December, 1915, to secure that two diagonally-opposite end windows, at least, should be kept open at night, doubtless effected much good; for did not the provision of better ventilated barracks and ships of war lead to a great improvement in the health of the two services many years ago—an improvement characterised by a great reduction of lung complaints, including consumption? The inability to solve the problem of a boot which at a moderate cost and with a fair application of dubbin will keep out the wet during a reasonable period of wear is also largely responsible (especially where the roads and paths are bad) for the high prevalence of catarrhal conditions so often to be noted during the cold and wet months. Everyone will agree that circumstances leading to better air conditions at night and drier feet by day must greatly reduce the prevalence of invaliding. These catarrhal conditions unfit men for their training, lower resistance to several forms of disease, and (as I believe) have been intimately associated with the high incidence of spotted fever among our troops. One cannot but be struck by the general coincidence of the prevalence of this cerebro-spinal fever and a high sick-rate from catarrhal affections; this may be due to a common predisposing cause, but it is probable that catarrhal conditions predispose to spotted fever, possibly exalt its virulence, and also favour its spread, and that they are sometimes abortive cases of the disease. Furthermore, histories of outbreaks of spotted fever in civil communities show that they are usually associated with overcrowding and the attendant lack of cleanliness and ventilation, and when spotted fever occurs we have learnt the value of at once allowing more cubic space, both to sufferers and contacts. And so it would appear that whenever catarrhal conditions are unduly prevalent amongst our soldiers, it would be a wise precaution to let this fact serve as a signal for increased ventilation, and to treat it as raising the possibility of the presence of more serious disease. The value of better ventilation is partly due to the cooler air thereby secured; for meningococci die so rapidly in cool air that the chance of the spread of spotted fever then becomes greatly reduced.

Let me add that this war has revealed in us a great capacity for national organisation. If such coördination is possible for *destructive* purposes it is possible for *constructive* purposes; and if, after the war the nation realises its prime duty (*Salus populi—Suprema lex*) this national capacity will find expression in a bold policy of public health, involving the coördination of all our available resources. The need for this, and the practicability of this, is, in my judgment, the greatest lesson that the war has taught us.

BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.—The following additional subscriptions to the Fund have been received:—

Doctors in the Belgian Congo (per M. Boulanger)—Dr. Marsez, 200 fr.; Dr. Etienne, 500 fr.; Dr. Heiberg, 500 fr.; Dr. Dubois, 50 fr.; Dr. Daniel, 100 fr.; Dr. DeLobelle, 500 fr.; M. Passanisi (pharmacien), 100 fr.; M. Boulanger (pharmacien), 100 fr.—total, 2050 francs = £80.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited. Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

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I would remind you of another sphere in which applied science offers a rich reward. In the sphere of industry, hygiene has already achieved some of its most notable triumphs in the reduction of preventable disease; but war has led to the direction of public attention to a further lesson which the hygienist has often sought to impress. I refer to the findings of the committee appointed to consider and advise on questions of industrial fatigue as affecting the personal health and physical efficiency of workers in munition factories and workshops. The accumulative effects of industrial fatigue not only damage the general health (this is reflected in sickness returns), they are also responsible for lost time and an unsatisfactory quality and quantity of work performed. As the more scientific organisation of industrial energy, in conformity with the physiological laws of life, is capable of raising the standard both of the workers' health and of his output, the importance of scientifically adapting the hours of labour to different kinds and circumstances of work cannot be denied. Now that there are plenty of actual working experiments and observations to support these conclusions of science, will employers of labour generally assimilate the fact (and profit by it) that the complicated human mechanism has its optimum conditions of work and that it is foolish and wasteful to ignore them?

CATARRHAL AFFECTIONS AND CEREBRO-SPINAL FEVER.

Another lesson of the war is that we have succeeded so little in impressing the importance of fresh air, by night as well as day, upon the masses that an open window at night is generally regarded with aversion by most army recruits, no matter whether they be town or country born; and unless after entering the army they are suitably trained they will allow the air of the huts at night to become, to put it mildly, enervating. The result is the nemesis of an excessive rate of sickness from catarrhal conditions of throat and lungs, from which the better-trained occupants of well-ventilated huts enjoy a marked comparative freedom, and the spread of infectious disease, including catarrh, influenza, lobar pneumonia, &c., is favoured.

The present allowance of 40 sq. ft. of floor space per man is ample, provided a sufficient number of windows (the only really effective means of ventilation in fully occupied huts) are kept open. The Army Council's action in December, 1915, to secure that two diagonally-opposite end windows, at least, should be kept open at night, doubtless effected much good; for did not the provision of better ventilated barracks and ships of war lead to a great improvement in the health of the two services many years ago—an improvement characterised by a great reduction of lung complaints, including consumption? The inability to solve the problem of a boot which at a moderate cost and with a fair application of dubbin will keep out the wet during a reasonable period of wear is also largely responsible (especially where the roads and paths are bad) for the high prevalence of catarrhal conditions so often to be noted during the cold and wet months. Everyone will agree that circumstances leading to better air conditions at night and drier feet by day must greatly reduce the prevalence of invaliding. These catarrhal conditions unfit men for their training, lower resistance to several forms of disease, and (as I believe) have been intimately associated with the high incidence of spotted fever among our troops. One cannot but be struck by the general coincidence of the prevalence of this cerebro-spinal fever and a high sick-rate from catarrhal affections; this may be due to a common predisposing cause, but it is probable that catarrhal conditions predispose to spotted fever, possibly exalt its virulence, and also favour its spread, and that they are sometimes abortive cases of the disease. Furthermore, histories of outbreaks of spotted fever in civil communities show that they are usually associated with overcrowding and the attendant lack of cleanliness and ventilation, and when spotted fever occurs we have learnt the value of at once allowing more cubic space, both to sufferers and contacts. And so it would appear that whenever catarrhal conditions are unduly prevalent amongst our soldiers, it would be a wise precaution to let this fact serve as a signal for increased ventilation, and to treat it as raising the possibility of the presence of more serious disease. The value of better ventilation is partly due to the cooler air thereby secured; for meningococci die so rapidly in cool air that the chance of the spread of spotted fever then becomes greatly reduced.

Let me add that this war has revealed in us a great capacity for national organisation. If such coördination is possible for *destructive* purposes it is possible for *constructive* purposes; and if, after the war the nation realises its prime duty (*Salus populi—Suprema lex*) this national capacity will find expression in a bold policy of public health, involving the coördination of all our available resources. The need for this, and the practicability of this, is, in my judgment, the greatest lesson that the war has taught us.

BELGIAN DOCTORS' AND PHARMACISTS' RELIEF FUND.—The following additional subscriptions to the Fund have been received:—

Doctors in the Belgian Congo (per M. Boulanger)—Dr. Marsez, 200 fr.; Dr. Etienne, 500 fr.; Dr. Helberg, 500 fr.; Dr. Dubois, 50 fr.; Dr. Daniel, 100 fr.; Dr. DeLobelle, 500 fr.; M. Passaniti (pharmacien), 100 fr.; M. Boulanger (pharmacien), 100 fr.—total, 2050 francs = £80.

Subscriptions to the Fund should be sent to the treasurer of the Fund, Dr. H. A. Des Vœux, at 14, Buckingham Gate, London, S.W., and should be made payable to the Belgian Doctors' and Pharmacists' Relief Fund, crossed Lloyds Bank, Limited. Surgical instruments should be sent to the Master of the Society of Apothecaries, Apothecaries' Hall, Blackfriars, E.C.

A Presidential Address

ON

LEGENDS AND LORE OF THE GENESIS OF THE HEALING ART.

Delivered before the Section of the History of Medicine of the Royal Society of Medicine,

BY RAYMOND CRAWFURD, M.A., M.D. OXON., F.R.C.P. LOND.,

PHYSICIAN TO KING'S COLLEGE HOSPITAL AND KING GEORGE MILITARY HOSPITAL, LONDON; FELLOW OF KING'S COLLEGE, LONDON.

MR. PRESIDENT AND GENTLEMEN,—We are apt to regard the history of medicine as a development of only modern growth; yet, if we look carefully into the oldest extant literature, we may see that even then the mind of man was occupied in speculation as to the origin of the art of medicine and in attempts to explain its progress to the stage at which he found it. Thus in the Rij-Veda we find the prevalent belief in the divine revelation of the art tempered by the assertion that in the selection of foodstuffs and of medicinal simples animals were the preceptors of mankind. If we then pass on a thousand years to what we may call the threshold of scientific medicine, we shall find a Hippocratic treatise devoted to establishing the position of medicine as a natural corollary of dietetics. So early may we discern a strain of rational empiricism leavening the lump of theurgy and superstition, that bid fair to occupy the whole arena of early medicine.

We see, then, that ancient literature recognised three springs of medical knowledge—a divine source, an animal source, and a human source—and I propose to advert briefly to the first two of these, leaving the last for consideration on some future occasion.

BELIEF IN DIVINE SOURCE OF MEDICAL KNOWLEDGE.

Hindoo Medical Legend.—Hindoo medical legend affords a typical account of the divine exposition of medical knowledge, and of its transference to mankind. Like the Nahuans of ancient Mexico, the Hindoos recognised four successive ages in their chronology. In the first age mankind remained virtuous, happy, and free from disease, for had not Brahma, the supreme creative being, given him the four immortal Vedas—the Rij, Yajur, Sama, and Atharva—containing all the knowledge required by mankind during the first age. It should be remarked, in passing, that these Vedas, replete as they are with samples of curative, as well as of preventive medicine, belie an origin in an age exempt from all disease. In the second age man fell away from virtue and disease appeared, to the curtailment of life and the impairment of memory. In the third age half of the human race was given over to depravity. In the fourth and present age the moral and physical corruption of man grew apace, so that disease flourished exceedingly. These four ages approximate closely to the four Biblical epochs of the primordial bliss of Eden, of the fall of Man, of the state of the earth before the Flood, and of the age that followed thereafter. Such compassion had Brahma for man's suffering in this fourth age that he produced a second class of books called Upavedas, or supplementary Vedas, one of which, the Ayur-Veda, was intended to teach the right manner of living, and the prevention and cure of disease, so that man might live happily in this world, in preparation for further happiness in a future state.

The Ayur-Veda, or Science of Life (*ayur* = period of living; *ved* = to know), is a sacred medical record of high antiquity, maintaining the general outline of the yet older Atharva-Veda. It shows that medicine in ancient India was part and parcel of theology, and that the same priests as controlled religion controlled also the treatment of disease; it was not till the end of the Vedic period that the physician began to shake himself free of priestcraft and to assume an independent individuality. Fragments only of the original Ayur-Veda survive, preserved in the Shastres or Commentaries on the Vedas. It is said to have consisted of 1000 sections, each of 100 stanzas. The divine Brahma, with truly human insight, realising the impossibility of learning so large a work, provided an abridgment in eight parts. Nowadays, such is the quality of mercy, that when a System of Medicine is published in no more than seven volumes it is accompanied by an abridgment in one. Divine exponents are the first to handle these divine books of healing in a celestial entourage. Brahma, so say Charaka and Susra'a, first instructed the god Dakhsa, the Prajabati, in the Ayur-Veda. This god compiled a book, the Chikitra-Darshana, which he communicated to the two Ashwins, or offspring of Surja, the Sun. These Heavenly Twins became the medical attendants of the gods, on whom they performed miraculous cures, and authors also of important medical works. Indra, King of Heaven, was so impressed by their wonderful cures that he induced them to instruct him in the Ayur-Veda.

Various legends exist telling of the transference of medical knowledge from heaven to earth. One relates how the Munis, or sacred sages, grieved at the melancholy spectacle of disease, met in council in the Himalayas and decided to ask the help of Indra, to whom in heaven they sent one of their number. Indra duly instructed their emissary in the Ayur-Veda, and on his return he related to the Rishis, or sages, the principles committed to him. In the strength of this knowledge the Rishis succeeded in living in happiness and health to extreme old age, wrought many cures on men, and wrote valuable works on medicine. Foremost in skill was Agnibesa, who instructed practitioners on earth, as the Prajabati did in heaven. Agnibesa's treatise was amended later by Charaka.

The number of different gods associated with healing in Hindoo mythology is due to the readiness with which, in India, one god supplanted another in popular favour.

One other Hindoo legend calls for mention, if only because it recognises the association of the serpent with medicine; in view of the prevalence of serpent worship in ancient India it is remarkable that more is not heard of it in Hindoo myth. The legend runs[1] that "the Vedas were lost in the deluge, but were recovered by the great serpent Ananta. At the churning of the ocean by the gods and demons the water of the ocean was converted into milk, and then into butter, from which precious gifts were derived. Among these was Dhanwantari, the physician, or holy sage, the possessor of the water of life drunk by the immortals." Indra instructed Dhanwantari, in heaven, in the Ayur-Veda, so that he practised medicine with great success among the gods. But seeing the many maladies and the misery of mankind he came on earth to cure them. As king of Benares his miraculous cures gained such fame that the divine sages resolved to solicit his aid: Susruta was chosen to be the one instructed by him. To the conservative sentiment of Dhanwantari the Ayur-Veda seemed all-sufficing, but so voluminous that he charged Susruta to abridge and arrange it for easier comprehension. Dhanwantari began by expounding surgery, as formerly there were no diseases among the gods, and only wounds required treatment; his exposition is contained in the six books of Susruta, which seem to have been committed to writing about 500 A.D. The Commentaries of Charaka and Susruta supply the groundwork of the more recent systems of Hindoo Medicine; the disciples of Charaka became physicians, those of Susruta surgeons.

The Vedas present the usual blend of prayer and invocation, of magic and spells, familiar in primitive medicine; but through all this flows a thin stream of rational empiricism, touching, on the surgical side, such procedures as the extraction of arrows, the dressing of wounds, amputation of legs and their replacement by iron substitutes, castration, and removal of eyes; and on the medical side the action of numerous herbs and the healing power of water. The oldest, the Rij-Veda, mentions no less than 1001 drugs, of which 760 were herbs. Vedic physicians lived as herbalists in houses surrounded by gardens of medicinal herbs, but they were instructed to seek knowledge also from shepherds and huntsmen, no doubt in the belief that they in turn will have learnt much from animals. It is noteworthy that many of the instruments described by Susruta are constructed after the form of beasts and birds. The anatomical knowledge of the Vedas is of the most elementary kind, and consists in little more than an enumeration of the chief component parts of the body, while their physiology stagnates in the expansive conception of breath as the source of vital power.

[1] T. A. Wise: Hindu System of Medicine.

Greek Legend: Asclepius.—No good purpose would be served by multiplying illustrations of the doctrine of the divine revelation of medicine from the records of Egypt, Assyria, Persia, Judæa, and other nations; in essence, they are everywhere alike. Greek legend, however, will repay fuller consideration, for the study of origins serves to throw light on its traditions and symbolism.

Among the gods of Greece, Apollo, son of Zeus and Leto, is the *doyen* of healers, while under his guidance Pæon ministered to the medical needs of the gods in Olympus. Other gods and goddesses are endowed with some share of the faculty of healing; thus, both at Athens and Epidaurus Athena bore the occasional surname "Health," and Asclepius was said to have received from Athena the blood of the Gorgon; that from the veins on the right side he used for the healing of men and the restoration of life, that from the veins on the left for their destruction. Asclepius is the medium by which Greek medicine came down from heaven to earth. In the earlier legend he stands out as a medical superman, and only later does he assume complete divinity. He was the son of Apollo and Coronis, who was slain by Artemis for infidelity to Apollo. As her body was about to be committed to the funeral pyre, Apollo snatched away the child Asclepius (whether by artificial abortion or by Cæsarean section we are not told), and gave him to Chiron, the Centaur, to instruct in the cure of diseases. One legend has it that Chiron acquired his knowledge from Apollo and Artemis; another, from his own observation and experience, gained while hunting on Mount Pelion. Hunters, as we have seen in Hindoo myth, were believed to enjoy special facilities for acquiring such knowledge; certainly acquaintance with the favourite foods of animals must have facilitated approach, and the baiting of traps and pitfalls. Homer[2] tells us that it was Chiron who instructed Achilles in the cleansing and healing of wounds, and Achilles transmitted his teaching to his friend Patroclus. Pindar[3] attributes the use of charms as well to Chiron. So great was the skill of Asclepius, that we find Castor and Pollux, the Greek Heavenly Twins, insisting on his accompanying the expedition of the Argonauts. Ultimately he acquired the power of restoring the dead to life, but this achievement proved his undoing, for Pluto, in alarm for his kingdom, complained to Zeus, who slew him with a thunderbolt and cast him down to Hades. He left behind him two sons, Podalirius and Machaon, and at least four daughters, Hygieia, Panacea, Egrea, who married a serpent and was changed into a willow, and Jaso; from which of these Hippocrates, who was reputed to be a descendant of Asclepius, was derived, we are not told. The exploits of the warrior surgeons, Podalirius and Machaon, are recounted by Homer, and to his record we need only add, that to Podalirius was attributed the discovery of the art of bleeding. On his return from Troy he was driven by a storm to the shores of Caria, where a shepherd, learning that he was a physician, took him to the king, whose daughter was sick. He is said to have cured her by bleeding her from both arms, while for his fee he received his patient in marriage, along with a rich grant of land.

Asclepius was represented in Greek art with a serpent twined round a staff; a dog and a cock not infrequently figure among his emblems; on a coin of Epidaurus a dog lies beneath the throne on which he is seated. The cock is his habitual offering of sacrifice, and there are the inevitable legends to explain both serpent and dog. Asclepius, it is said, was shut up in the house of one Glaucus, who had sought his aid; while he was deep in thought there came a serpent, carrying a herb in its mouth, and twined itself round his staff. Asclepius killed the serpent, and used the herb to restore the dead to life. The presence of dogs in the sanctuary of Asclepius was explained by a legend that, when an infant, he was suckled by a bitch. According to an inscription found in the temple of Asclepius at Peiræus the dogs were fed on the sacrificial cakes. If we may credit Sextus Empiricus,[4] the flesh of these sacred dogs was given to the patients to eat as medicine. As we shall see presently, the dog was credited with imparting to man knowledge both of herbs and of the healing of wounds; may be, then, its flesh was at one time eaten sacramentally, as embodying the god of healing. There was another legend that Asclepius had been suckled in infancy by a goat, and Pausanias blends the two legends into a story of his being suckled by a goat and guarded by a dog. According to Ælian,[5] dogs, goats, serpents, oxen, and pigs have the power of foreseeing an impending epidemic; it is perhaps worthy of note that three of these animals figure in the legends and symbolism of Asclepius. Inscriptions found in the temples of Asclepius record the healing of blindness by dogs licking the eyes, and the cure, by licking, of a tumour on the neck of a boy. Other gods of healing, for instance, the Sumerian Gula and the Babylonian Marduk, are represented accompanied by a dog.

The Serpent in relation to Healing.—The association of Asclepius with the serpent is of very great interest and importance. The association is not peculiar to him, for his Phœnician counterpart, Eshmun, likewise has a serpent as his symbol; so has his own daughter, Hygieia, who is represented feeding a serpent from a saucer. In Madagascar, too, Ramahavaly, the god of healing, was held to be the patron of serpents and to employ them in his service, for good or for harm. When his image was carried in public, each of his attendants held a writhing serpent in his hand, to inspire awe in the beholders. The Naga (serpent) tribes of Cashmir acquired their medical skill from the serpent, and the ancient Celts by drinking serpent broth. In India it is common to make clay or brazen images of the serpent, and offer sacrifice to them on behalf of the sick, just as Moses in time of pestilence set up a brazen serpent, that all might behold and be cured. The inhabitants of Southern Arabia regarded medicinal waters as haunted by serpent jinn, and in a certain African lagoon dwelt a serpent that relieved madness, and in an Algerian well one that cured sore eyes. There was a prevalent belief in the Middle Ages that the household snake, if not propitiated, would prevent conception.

In the legends of Asclepius we have already encountered the belief that the serpent has knowledge of herbs that can restore the dead to life, and we meet it again in the story of Polyidus. The same belief is current in German, Italian, and Lithuanian folk-lore. A Syrian story[6] tells how the king of the serpents restored three slain men to life by washing them with the waters of life; and Russian folk-lore represents the serpent as possessing a magic water that heals all wounds, restores sight to the blind, and vigour to the cripple. One Russian tale describes a wonderful garden, in which were two streams of healing and life-giving water, and round it was coiled a serpent. In Eden the serpent knew well the properties of the Tree of Life.

Sacred snakes were kept in the temple of Asclepius, and fed with honey-cakes; at Epidaurus certain native snakes were sacred to Asclepius. The temple snakes were credited with effecting cures by licking patients with their tongues. Similarly the blind emperor Theodosius received his sight by a serpent laying a precious stone on his eyes, and Siegfried became invulnerable by bathing in the blood of the dragon.

Besides the tales of miraculous cures by serpents, there is a crop of legends that seek to explain how man acquired the healing knowledge of the serpent. The serpent, by touching his ears or his lips, makes him to understand the voices of birds, who have the gift of foretelling the future, and the language of plants, so that they disclose to the hearer their secret medicinal properties. That serpents should know the language of birds was not unnatural, for they were believed to be generated from the blood of birds; this idea may be referable to the fact that serpents eat the eggs of birds. Yet another widespread belief held that the medical skill of the serpent could be acquired by eating its flesh; this is merely an illustration of the general belief that the properties of animal, man, or god may be acquired by eating the possessor.

Cicero says that the ancients explained the connexion of the serpent with Asclepius by the fact that, like the healing art, the serpent yearly sloughed its old skin and put on a new; but, in all probability, Asclepius was originally himself a serpent that subsequently became transformed into an anthropomorphic god, for whom conservative religious sentiment preserved the symbol of the serpent. This same conservatism is seen in the custom of sending a sacred snake from an existing sanctuary whenever a fresh one was established. It is not clear why the serpent is represented twined round a staff, just as it was coiled round an apple-tree in the garden of the Hesperides. Can this, too, be a symbol?—a symbol of some tree-spirit standing yet further back than the serpent in the pedigree of Asclepius?

[2] Iliad, XI., 827. [3] Pyth., III. [4] Ed. Bekker, p. 174. [5] Nat. Anim., VI., 1e. [6] Frazer: Pausanias, II., x., 3.

Zoologists tell us that the serpent is by no means an intelligent animal, despite the fact that it became the legendary embodiment of knowledge, and of medical knowledge in particular. The serpent of Genesis was more subtile than any beast of the field. The strange sinuous form, the mysterious gliding movement, the annual sloughing of the skin with its annual renewal, the weird fascination of its victims—all these must have served to endow the serpent with the homage of wonder that attaches, often so inaptly, to the unknown; and perhaps the deadly poison of the almost imperceptible bite may have seemed to link it appropriately to the science of herbs, that bring life or death to man.

BELIEF IN ANIMAL SOURCE OF MEDICAL KNOWLEDGE.

From this brief consideration of the serpent, to the ancients so much more of a god than an animal, we may pass to the kindred belief that man owed his knowledge of medicine to observation and imitation of the practices of animals.

The Dog.—From the evidence of geology we know that the dog was the first animal to be domesticated, and man must have soon observed its habit of licking its wounds, as cats and horses also do. He must have noted again and again how much more readily his dog's sores healed than his own, and not unreasonably attributed this to the licking. It is no matter for surprise, then, that we should find this method of healing wounds employed in the temples of Asclepius, by the tongues of dogs and of serpents. In quite recent years licking of sores by the tongue of a dog was held in repute both in Scotland and France.[7] In the absence of any knowledge of the essential conditions that govern the healing of wounds, it was a natural conclusion that the licking was of therapeutic intent, and akin to the cleansing that was the central feature of the primitive treatment of wounds. There is no certain evidence that licked wounds of dogs heal more readily than those which cannot be reached by licking; and the contrast with the slower healing in man would seem to be due to the wide difference in immunity to sepsis between man and dog, for the dog is highly refractory even to subcutaneous injection of pyogenic organisms. There seems no reason to suppose that by licking their wounds dogs imbibe toxins that produce specific antibodies which assist them in the struggle against invading organisms, for they appear to have little or no need of such assistance. When one reflects how a child sucks an injured finger; how he puts his hand to a hurt leg or a bruised head; how hard each one of us finds it to keep his fingers from a scab, it seems not improbable that underlying all these tendencies is a common instinct to touch the injured part with the tongue or hand to determine the injury and, if possible, to remove the cause. If, in the case of the tongue, this should promote healing by the removal of dust and particles of dirt, this contingent benefit is merely incidental and does not indicate a definite therapeutic purpose.

There is a very ancient tradition that dogs, when they are ill, eat grass or standing corn to relieve the stomach by vomiting and purgation, and Ælian[8] says it was from this that the Egyptians gained their knowledge of purgatives and emetics. Aristotle says that wolves do the same, and he might also have included cats. Ælian adds that dogs relieve themselves in this way of worms and of the excess of bile which causes rabies. The grasses that dogs eat have been identified as *Triticum caninum* (dog-wheat), *Agrostis canina* (brown bent-grass), and *Cynosurus cristatus* (dog-grass). From observation of my own and other dogs I feel sure that dogs do not eat grass, exclusively or even chiefly, when they are sick, and certainly not with the purpose of exciting vomiting or purgation. They are most prone to eat grass immediately on reaching green fields after a spell of town life; as a rule they cease to eat it, or do so very rarely, after a few days in the country. I have never seen the grass produce actual vomiting; it is usually hawked back, churned up with saliva, and has probably seldom passed far down the gullet. When not regurgitated I have never known it to cause diarrhœa; any looseness of the bowels is referable to the increased exercise that the dog takes in the country as compared with a town. The number of human beings who chew grass-bents is quite as large as that of dogs that chew grass, and I have an impression that the habit is far more common among town-dwellers visiting the country than among country-folk. The human being certainly chews it because he likes the taste, and avoids swallowing it for fear of exciting vomiting. I strongly suspect that there is some subtle aroma of the grass that tickles the dog's palate, and seeing how much misery a dog suffers in the prospect and act of vomiting I am loth to believe that it entertains any therapeutic purpose.

VENESECTION.

The origin of venesection was another matter that excited speculation in the ancient world. Pliny[9] says that the hippopotamus invented blood-letting and taught the art to man. This animal, he says, when surfeited with blood, seeks out the sharp point of a newly-cut reed, and pressing against it, opens one of the veins in the thigh, to its immediate relief; then it plasters the wound over with mud. Buffon, quoting P. Labat, repeats the story, substituting a sharp-pointed rock for the reed, and with the picturesque addition that the animal agitates its body to promote the flow, and when it thinks it has lost a sufficient quantity rolls in the mud so as to close the wound. With respect to the various observations involved in these statements, it is the case that the hippopotamus is very prone to exhibit wounds, in spite of the fact that in most parts the skin is two inches thick. These wounds seem to arise in two ways: most commonly as the result of fights, as male hippopotami in the wild state are constantly fighting, regardless of the pairing season, and a wounded animal is often furiously attacked by a comrade; but also as the result of rubbing themselves against any convenient projection, a habit that is common among animals in confinement, and even among such domesticated animals as cows, sheep, and pigs. Again, it is a habit of both hippopotamus and rhinoceros to roll in the mud of river-banks till they are plastered all over, and the mud would certainly adhere more readily to the abraded surface of a wound, giving the semblance of a purposive dressing of mud. The Andaman Islanders use mud in similar fashion as a protective covering, as some think to guard them from the attacks of mosquitoes; but this is probably only part of the truth, as mud is used as a dressing in countries where there are no mosquitoes, probably for no better reason than that it is always handy. In the case of the Andaman Islanders, dwelling as they are almost on the equator, it is more likely used as a protection against the direct rays of the sun. It is not without interest, in considering the association of the hippopotamus with venesection, that the hippopotamus is one of the animals that has a coloured sweat, carmine in its case.

The vampire bat has shared with the hippopotamus the credit of having taught mankind the art of venesection; such was the belief of the natives of Peru at the time of the discovery of that country. Peter Martyr[10] describes the rescue from death of a man grievously stricken with pleurisy by the agency of one of these bats, after the human phlebotomist had failed to strike blood. Buffon cites several travellers who assert that large vampire bats suck the blood of men and cattle when asleep; they were believed to render the victim insensible to their bite by agitating the air with their wings and throwing him into a deep sleep. Doubt was thrown on these observations till Darwin, in his "Voyage of the *Beagle*," described how he actually saw a vampire bat sucking blood from the withers of one of the camp horses. These bats attack man less frequently than cattle, and usually when asleep and on an exposed foot. They have a capricious taste, for while one person may sleep in the open air with perfect immunity, another will be bitten almost nightly. This trait is common among blood-sucking animals, such as fleas and lice; whether it is due to difference in the blood, or to the relative thinness of the skin, or to some other cause is obscure. Females, on the whole, seem to be more susceptible to both lice and fleas than males, and I can testify that not one of the least blessings conferred on myself by a long period of connubial felicity has been complete immunity to fleas. The habitual food of these bats is insects, and blood is a prized but infrequent luxury. It is popularly believed in Peru that bites sometimes prove fatal, as the blood continues to flow after the bat has relaxed its hold; may be that, like the leech, it secretes an albumose in its saliva. J. G. Wood says that the wound is sore and

[7] Gregor: Folk-lore of the North-East of Scotland, p. 127. D'Tharace: Erreurs Populaires et Propos Vulgaires, ii., 178.
[8] Ælian: Anim. Nat., V., 46; VIII., 9. Pliny: N. H., XXV., 51. Aristotle: Hist. An., IX., 6.
[9] N. H., VIII., 40, and XXVIII., 31.
[10] De Novo Orbe, Decade 8, ch. vi., p. 30.

inflamed, but never fatal, but he appears to base this conclusion on an estimate of the amount a bat can imbibe, and takes no account of the subsequent loss.

Charlevoix,[11] in his "History of Paraguay," refers the discovery of blood-letting to the anta, an animal, "who, when he finds himself overstocked with blood, opens one of his veins with the point of a reed." The anta is the South American tapir, which Linnæus described as a sort of terrestrial hippopotamus. Lyddeker says that their hides are often thickly plastered with mud, probably as a protection against insects, and he adds that they are often found wounded by the claws of jaguars, which are their worst foe; these circumstances taken together show how this legend may have originated.

Yet another ascription of the art of bleeding is to the leech, of which Pliny says[12]: "The action of leeches is looked upon as pretty much the same as that of the cupping-glasses used in medicine, their effect being to relieve the body of superfluous blood, and to open the pores of the skin."

He is a bold man that would venture to assign to any individual, man or animal, the honour, if such it be, of having introduced venesection into medicine; but we must not forget that it may well have originated out of all connexion with medicine, as a part of primitive ritual, and that its place in medicine may be merely that of an ancient ritual survival. There is a well-defined stage in the evolution of sacrifice, at which, instead of sacrifice of the man himself, blood only is taken from him, and his life is spared. He is brought to the altar and gashed by the priest. A modification of this is met in the worship of the Phrygian Attis, where the priest draws blood from his own arm and presents it as an offering to the god; he is both priest and victim. In later stages an animal and then an animal's blood is substituted for a man and a man's blood, and later still a plant or the juice of a plant, for red wine is the blood of the plant.

Human sacrifice and ritual cannibalism seem to have reached their zenith among the ancient Mexicans. The ordinary mode of sacrifice was for the priest to slash open the breast and tear out the heart, then to fling the corpse to the worshippers to feed on in their homes. But at many of their religious fasts it was customary to draw blood from ears, eyelids, nose, lips, arms, legs, and body by thrusting the thorns of aloes into their veins and by passing sharp sticks through the tongue. With such practices prevailing among the priesthood, and with medicine in their hands, one may discern a portal by which blood-letting may have found its way into medicine.

The *rationale* of ritual blood-letting lies in the belief that the soul and the life of man reside in his blood. Even Harvey regarded the blood as the seat of the soul, and we find him in his Prælectiones refuting Aristotle, who had asserted the primacy of the heart, and laying it down dogmatically that the "soul is the blood." By eating the flesh or drinking the blood of the victim the worshipper eats the body or drinks the blood of the god, for by the act of sacrifice the victim becomes one with the god; the desire for complete union with the god, by commingling with his substance, is a dominant feature of early worship. The gods themselves are constantly rejuvenated by the blood of sacrifices, so that they may perform with unimpaired activity the vitally important functions incumbent on them. The Mexicans and Nicaraguans used to make effigies of their gods out of meal kneaded with human blood and devour them sacramentally. Blood was also used as a medium of divination, the Babylonian physicians drawing important conclusions from the behaviour of the blood drawn in blood-letting. It is interesting to find modern pathologists adopting hæmatoscopy afresh, as a means of divining morbid conditions of the subject.

Whatever the origin of blood-letting, we find the practice firmly established anterior to the earliest medical literature; though not mentioned by Homer, it was well known to Hippocrates, and was an habitual remedy in veterinary medicine in the time of Vergil.[13]

THE CLYSTER.—HIBERNATION.—DITTANY AS A VULNERARY.

The Egyptians are said to have learnt the use of the clyster from the ibis. Pliny[14] says: "The ibis, by means of its hooked beak, laves the body through that orifice, by which it is essential to health that the residue of the food should be discharged." The sacred ibis, though so common in the land of the Pharaohs during its time of greatness, has now disappeared from Egypt; it has a very long curved bill. No doubt the legend was derived from the habit the bird has of collecting with its beak the oil from the preen-gland, situated, as in most birds, above the rump; the oil is used for giving a gloss to the feathers and in water-birds is very abundant; when preening birds dip their bills into water and shake them, probably so as to rid them of any residue of oil. These facts would seem to explain the statement of Cabanés,[15] that his friend, Dr. Ballion, had seen wader birds suck up water with the beak and carefully transfer it to their anus, and then shake their feathers and stand erect as though greatly relieved. Poultry, swallows, and other birds do at times remove fæces from their young with their beaks, but only if the fæces are obtruded and retained *in situ*; this, however, is probably merely an instinct of cleanliness. It is possible that the story of the ibis may have arisen from the coincidence that the hieroglyph for the ibis is identical with that for a Moon-god, in which character Thoth, the divine physician, was often represented. It deserves also to be mentioned that the use of the clyster for evacuating the bowels was a late development; its earlier use was as a means of introducing drugs and aliment into the body.

The hibernating bear inevitably excited the curiosity of the speculative; but far greater interest was displayed in the associated phenomena of hibernation than in the causes that induce the state. Topsel[16] believed that it was the direct result of eating certain herbs that imparted the faculty of sleeping the whole winter without food and without sense of cold. In support of his belief he states that a cow-herd, who observed a bear eating a certain root, ate some of it himself, and was immediately seized with such a desire to sleep that he lay down and slept all through the winter, waking again only in the spring. Modern research suggests that the state is excited rather by the recurrent failure of the general food-supply than by the ingestion of any special foodstuff, and is limited to those species in which the power to maintain temperature at a permanent average height during sleep has been lost or never acquired.

Aristotle[17] says that after hibernation bears eat arum, so as to open the bowels, which are empty and collapsed, and that they chew sticks of wood, as though they were cutting teeth, or as Pliny[18] suggests, so as to sharpen their teeth; the latter adds the observation that their eyesight is dimmed, and that to relieve this they invade the nests of bees, so that the stings they receive in their throats may draw away the oppression from their heads. It is not easy to obtain reliable evidence of the behaviour of hibernating bears, as they do not hibernate in captivity, as in our own Zoological Gardens. We do know, however, that in the wild state the bowel is mechanically obstructed during hibernation by a plug technically known as "the tappen," which is composed almost entirely of pine-leaves and the various substances which the bear scratches out of ants' nests; this tappen is discharged on the return of activity in spring. This, no doubt, is the basis of the tradition that the bear seeks special herbs to excite purgation. Ælian[19] holds that the purgation restores the bear's power of taking food, but Topsel conceives it to have the further purpose of improving their general health, so as to render them highly savage during all the time that they are guarding their young. The eating of ants and of honey was believed to be also designed for the purpose of opening the bowels. Pliny, however, fancies that ants are eaten to counteract the effects of the mandrake, when it has been taken inadvertently. This whole sum-total of credulity has provided practical medicine with no hypnotic at all, and no laxative more active than honey, even if its use could be referred to this source. In raiding a nest of bees for honey the bear is quite regardless of the numerous stings it receives, which seems to have induced Pliny's belief, mentioned above, that the stings were solicited for a definite purpose; perhaps some colour was lent to the belief by the knowledge that bears, especially in confinement, are very prone to ophthalmia, and are often

[11] Lettsom: History of the Origin of Medicine.
[12] N. H., XXXII., 42. [13] Georgics, III., 457, seq. [14] N. H., VIII., 41.
[15] Bulletin Général de Thérapeutique, 1912.
[16] History of Four-footed Beasts, 1658.
[17] Hist. Anim. VIII. 7, and IX. 6.
N. H., VIII., 52. [19] Nat. Anim., VI., 3.

totally blinded by it. The grizzly bear's habit, when coming out of hibernation, of standing upright against a tree and scoring the bark with its claws calls for passing notice, as affording a clue to the legend of the chewing of sticks. This primitive method of manicure is doubtless directed to reducing the redundant growth of the nails to serviceable proportions.

When Æneas [20] was wounded by an arrow, Venus sped to Crete to fetch the herb dittany, wherewith Iapyx should heal his wound. Deer and goats well knew its value as a vulnerary, to remove arrows from their wounds. It is difficult to conceive a stage of mental development at which man employed herbs in preference to his hands for the extraction of arrows, as even animals possess this power in a considerable degree. Elephants have been seen to extract weapons with their trunks, monkeys extract thorns with considerable skill, and dogs remove splinters and thorns, on occasion, with their teeth, though they often present the damaged part for the attention of their master, when they cannot effect it with their teeth.

THE SECUNDINES AND PARTURITION.

Such a wealth of legend has gathered around the disposal of the secundines, and indeed around all the phenomena of parturition, that a cursory review of the whole subject will best serve our present purpose. Pliny [21] says that hinds eat the herb seseli and the leaves of the hart-wort before parturition, to make labour easy; and that immediately after delivery they eat the two herbs seseli and aros together, so that their milk may be impregnated with their juice before they suckle their fawns. Aristotle [22] adds that the hind swallows the after-birth immediately after parturition, and that it is impossible to prevent her, as she catches it before it reaches the ground. He surmises that the placenta has medicinal properties. Apparently it was in virtue of its purgative [23] action that seseli was believed to aid parturition, but, on the other hand, Pliny says that the action of hart-wort is to arrest looseness of the bowels. It is impossible to reconcile these contradictory therapeutics; suffice it to say that the oral transmission of medical lore is not conducive to its accuracy.

With regard to the mare, Pliny [24] writes that "the colt is born with a poisonous substance on its forehead known as hippomanes and used in love philtres; it is of the size of a fig and of a black colour. The mare devours it immediately on the birth of a foal, and until she has done so she will not suckle it." According to Cuvier, a concretion is sometimes found in the liquor amnii of the mare which she instinctively devours, as other quadrupeds do the after-birth, but I have failed to obtain corroboration from horse-breeders, and incline to Aristotle's opinion that all the stories about hippomanes are old wives' tales. Probably the whole fiction arose out of the mare eating the placenta. Vergil [25] seems somewhat uncertain as to the exact nature of hippomanes, for in one passage he accepts the description given by Pliny, while in another he describes it as the vulval discharge of a mare in season.

The belief in the galactagogue properties of the placenta clearly prevailed in Pliny's time, as it does even to-day, in spite of a good deal of experimental evidence in a contrary sense. Lederer and Pribram [26] claimed to have produced within a few minutes of the injection of placental extract an enormous increase in the amount of milk secreted during a period of two or three minutes soon after the injection. This may, however, have been produced merely by a temporary and more rapid evacuation of the mammary reservoir by rise of pressure from increased muscular tonus. Dixon and Taylor [27] claimed to have found such pressor substances, but Rosenheim [28] showed that they were products of putrefaction in the placental extracts employed in their experiments.

Lane-Claypon and Starling [29] obtained negative results, as regards increased activity of the mammary glands, from injection of placental extract. Their experiments, however, seemed to show that the growth of the mammary glands during pregnancy is due to the action of a specific chemical stimulus produced in the fertilised ovum, which is increased in amount *pari passu* with the growth of the fœtus. They suggest that lactation is due to the removal of this substance, which must be regarded as exerting an inhibitory influence on the gland cells, hindering their secretory activity and furthering their growth; in that case it is probably also a chemical product of ovarian activity that stimulates growth of the breasts. Biedl and Koenigstein [30] in the main confirmed the findings of Lane-Claypon and Starling.

Frank and Unger's [31] experiments led them to think that the changes in the breasts, both at puberty and in pregnancy, depend entirely on ovarian activity and have nothing to do either with fœtus or placenta. They consider that the changes in the breasts, found by Lane-Claypon and Starling after injection of fœtal extracts, do not exceed the physiological degree of variation in size occurring normally in the breasts of virgin rabbits.

Basch [32] suggested that some substance elaborated in the placenta activates the ovary, which in turn stimulates growth of the breasts, with ultimate lactation; but other experimenters have not confirmed him. The general tenor, then, of recent experimental evidence is decidedly opposed to the ancient belief that animals devour the placenta so as to excite or to increase secretion of milk. If, then, primitive man acquired the habit from observation of animals, he was following a blind guide.

PLACENTOPHAGY.

Much interesting evidence is available as to the primitive method of disposing of the placenta. In 1556 the missionary Jean de Léry [33] reported that the Brazilian natives devoured the placenta, and this was subsequently confirmed by Engelman and Rodet. Raynal says that, in America, the Topinamboos and the Tampuya devour the after-birth; the same practice persists in certain parts of the Soudan. About the year 1700 A.D. the traveller Gemelli Carreri observed that among the Yakouts, a people of Russian Asia, the father took the placenta immediately after delivery, had it cooked, and regaled his parents and friends. But there is no need to go so far afield for evidence of this mode of disposal of the placenta, for Reverdin [34] records an instance in his own practice. A woman, immediately she had been delivered, begged to be permitted to see the placenta, which was lying steaming on a cloth. Reverdin handed it to her unsuspectingly, and she expressed surprise at its appearance and examined it closely. Suddenly she seized it, and with a wild cry devoured it. Next day he asked her why she had done it, and she told him that a wild desire to do so had overcome her. "Do you still crave for it?" asked Reverdin. "Phew! What a disgusting idea!" she replied. "I cannot conceive how I came to do it." Other instances of the kind are to be found in contemporary medical literature,[35] and no doubt the occurrence would be much more frequent were not the placenta so sedulously secreted and so expeditiously disposed of by the midwife.

It is difficult to appreciate how the custom arose of the husband devouring the placenta instead of the parturient wife, but the same might be said of the couvade; here, again, tradition seems to afford a clue. In Chinese medicine placenta is used as an aphrodisiac. Suetonius says that Cesonia excited the sexual passions of her husband Caligula by administering it to him in a potion; and in recent times women used to keep the umbilical cords of their female children so as to excite their lovers. Placenta figured in the pharmacopœias of the seventeenth century for use as a galactogogue, an aphrodisiac, a laxative, and a remedy against sterility, chlorosis, and uterine disease. In all these uses one detects the trail of sympathetic magic and no trace of rational pharmacy. For a similar reason powdered egg-shells found a place in the old pharmacopœias, regardless of the fact that they are of extra-embryonic origin; they do, however, appear to exercise some beneficial physiological influence, for there is some evidence that they help fowls to put on weight; may be that they supply calcium salts in a readily assimilable form. A French writer has suggested that they act on the fowl by stimulating its generative system, and he has no doubt of the aphrodisiac action of the placenta when devoured by the

[20] Æneid, XII., 411 seq. Arist., H. A., IX., 6. Pliny, N. H., VIII., 41, and XXV., 53. [21] N. H., VIII., 50, and XX., 18.
[22] Hist. Anim., IX., 6. [23] Ælian, N. A., XIII., 50.
[24] N. H., VIII., 66. [25] Æneid, IV., 515. Georg. III., 280 seq.
[26] Arch. f. Physiologie, 1910. [27] Brit. Med. Jour., 1907.
[28] Journal of Physiology, 1909. [29] Roy. Soc. Proc., 1906.
[30] Zeitschrift f. Exp. Path. u. Therapie, 1910.
[31] Arch. of Int. Med., 1913.
[32] Monatschrift f. Kinderh., 1909.
[33] La Placentophagie, Journal de Méd. de Paris, Sept. 7th, 1902.
[34] Compt. rend. Soc. d'Obst. de Gynéc. et de Pédiatr. de Paris, 1900, vi., 91.
[35] R. Besson: La Placentofagia, Clin. Ostet. Roma, 1905, vii., 145; and L. Gross: Ueber Placentophagie, Med. Woch. Berlin., 1906, vii., 212.

female rabbit and guinea-pig. If we admit the existence of such aphrodisiac properties, even in imagination, it suggests a reason for the male feasting on his wife's placenta. In India, where fertility is more prized than in this country, aphrodisiacs occupy a prominent place among medicinal remedies; it is only in the last few years that they have fallen out of the English text-books.

With wild mammals it is the rule for the mother to eat the placenta. Dr. Chalmers Mitchell assures me that this is the case with deer, wild asses, zebras, wild cattle, marmosets, and rabbits. Apes do not breed in captivity, so that nothing is known of their placental habit. There is a striking contrast with many domestic animals in the treatment of the placenta. Mares and ewes hardly ever eat the placenta, but instances of each are known. Cows vary greatly; thus a breeder of South Devons tells me that, left to themselves, 50 per cent. eat it, while an owner of cross-bred stock speaks of it as exceptional. The evidence of rustic cowmen is tainted by their ingrained conviction that every cow would eat it, given the opportunity. Sows, cats, and bitches in the vast majority of cases eat the placenta. In the case of the sow the last two or three pigs are often discharged along with the placenta, and she is very apt to swallow them along with it, no doubt mistaking them for placenta. Sows sometimes eat their whole litter; it is said that they never do so after they have once suckled their young pigs; this throws a curious light on the mental process by which a sow becomes aware of the identity of her young. Cats, marmosets, and rabbits, all of which eat the placenta, are also liable to eat their young. Birds, at times, eat the shells of the hatched egg, though the more usual procedure is to eject them from the nest, and often to carry them to a distance from the nest.

It is interesting to note how much more frequently the placenta is eaten by wild than by domestic animals, and I would suggest that the purpose is to conceal all trace of the existence of their young from predatory foes. Secretiveness with animals, and with wild animals in particular, dominates every detail of parturition. They hide themselves away, and if watched curl themselves up so that it is exceedingly difficult to follow their procedure. As soon as the young are born they endeavour to keep them out of sight of an intruder by interposing their own body. Can this, too, be the explanation of the habit among the carnivora of eating the dung and lapping the urine of their young, a habit that persists in the domestic cat and dog? Animal motives, like human motives, no doubt are often mixed, and what serves the end of cleanliness may equally serve other ends as well. I had expected to find some trace of this habit among puerperally insane women, but have not succeeded, and one would hardly look for it among the sane at present standards of cleanliness and civilisation.

POSITION IN PARTURITION.—TREATMENT OF UMBILICAL CORD.

This is but one instance of a striking uniformity of habit among primitive men and animals in the procedure of parturition; in the matter of posture we shall find the same. The recumbent posture in parturition is by no means universal with the human female. Only a few years since, and perhaps still, it was a common practice in some country districts for a woman to be delivered standing, and supporting herself with her arms on the end of the bed; some midwives indeed insisted on the erect position. I retain a most vivid recollection of my first attendance on a woman in labour and her restless promenade of the room, for all the world like a hungry lioness pacing to and fro inside the bars of her cage; rupture of the membranes occurred and the head of the child was actually protruding before I could persuade her to lie on the bed. In native races it is common for women to be delivered on the march with supreme ease and with little or no pain. Peter Martyr[36] has a brief picture of parturition which illustrates this matter: "When the women know it is time to be delivered of the child they go into the neighbouring wood, and there taking hold of the boughs of any tree with both their hands, they are disburdened without the help of any midwife, and the mother herself, speedily running, taketh the child in her arms, and carrieth it unto the next river. There she washeth herself and rubbeth and dippeth the child often, and returneth home again, without any complaint or noise, and giveth it suck; and afterwards, as the manner is, she washeth herself and the child often every day." This helps us to understand why Leto clasped a bay tree when about to give birth to Apollo and Artemis, and the prevalence of the same practice in Sweden in former days. Frazer suggests that the parturient woman was seeking moral rather than physical support, in an appeal for an easy delivery and avoidance of the perils of child-birth, addressed to the tree-spirit embodied in the tree, who was credited with power over the fertility of women. Our museums also and illuminated manuscripts testify that the recumbent posture in parturition has only been arrived at by a gradation of stages, the sitting posture having been long in vogue.

Passing to animals, we find a general statement of Aristotle[37] that "quadrupeds, as a rule, lie down for parturition, and in consequence the young of them all come out of the womb sideways. The mare, however, when the time for parturition arrives, stands erect, and in that position casts its foal." As a fact, mares usually foal lying down in this country, but it must not on that account be assumed that Aristotle's statement is necessarily wrong. For example, among cows posture seems to vary to some extent with the breed; as a general rule, they calve lying down; but whereas this is the case with South Devons, Devons often calve standing. In difficult labour a cow often gets up from lying down, when the calf is half-born, probably so as to facilitate labour. Ewes, as a rule, lamb lying down on one side; exceptionally they stand, and the same is the case with sows, bitches, and cats. Speaking generally, then, the domestic animals, whose habits have been most likely to influence man, adopt a recumbent posture, like the human female, but there are many exceptions to the rule.

In animals such as mares, cows, ewes, and sows the cord is practically always severed as the animal rises, or, if she is delivered standing, by the descent of the young; with mares the cord not infrequently breaks close to the navel, and there is danger of losing the foal from hæmorrhage. With carnivora the cord is frequently intact, and the animal divides it with her teeth before she rises. Wild animals are so secretive over parturition that, even if one be present, it is difficult to see what they are doing; rats certainly, like bitches and cats, divide the cord with their teeth; and Mr. Pocock, of our Zoological Gardens, informs me that he is under the impression that this is true of most carnivora. A primiparous bitch is less expert than one that is multiparous in severing the cord, and is apt to sever it too close to the pup's body. Foals are not infrequently born in their membranes and die of suffocation, but in the case of a calf so born the mother ruptures the membranes by licking them with her rough tongue. This is only one illustration of the far stronger maternal instinct of the cow than of the mare, and does not bespeak a purposive intelligence.

In the treatment of the umbilical cord I have succeeded in finding in man a vestige of approximation to the animal habit. One of the members of this section, who for many years conducted a large general practice in South Wales, tells me that he was cognisant of an instance in which a young idiot woman divided the cord of her infant with her teeth. I have encountered no other instance either in literature or by personal inquiries, and I should value greatly other information on this head, and, indeed, on any matters touched on in this paper. Lettsom says that native South American women commonly divided the cord with a firebrand, which cauterised the vessels, so that they needed no ligature.

To the ancients it seemed reasonable to explain similarity of practice by the assumption that man had taken a lesson from animals, but for us it is more reasonable to suppose that we have to do with the maintenance of a habit acquired before the partition of the common ancestral tree.

THE TROCHILUS AND THE CROCODILE.

The toilet of the mouth has its legendary origin in the story of the trochilus, which serves also to illustrate the danger of incorrect inference from correct observation. Herodotus, Aristotle, Ælian, and Pliny all tell it in much the same terms. Ælian[38] says that leeches invade the mouth of the crocodile, as it swims with it open, and cause the animal much discomfort; feeling the need of the medical aid of the trochilus, it swims to the bank and lies there with its jaws agape, whereupon the bird enters and removes the leeches,

[36] Dec. 7, ch. ix., p. 275.

[37] H. A., VI., 22.

[38] Nat. Anim., III., 2.

while the crocodile remains perfectly still so as not to harm it. Pliny suggests that the animal opens its jaws to admit the trochilus because it enjoys the titillation of its movements. Buffon cites a traveller who actually saw the bird enter the crocodile's mouth, which closed behind it each time, and opened again after a while for the bird to emerge. Topsel says that the beast reopens its mouth because the bird carries sharp thorns on its head which prick the crocodile's palate; and the modern Egyptian, according to Leith Adams, says that the reminder is conveyed to the crocodile by the horny spurs of the bird, which Brehm identified as the Egyptian plover. One can scarcely doubt that the performance is due to the bird's quest for palatable food and not to the intelligent demand of the crocodile for the effective scavenging of its teeth.

DISORDERS OF VISION.

A rich crop of legend grew up around the properties and disorders of vision. Men were puzzled by the closed eyelids of the young, and suggested various explanations of the mode by which they acquired sight. Pliny[39] says that puppies are born blind, and that the length of time before they acquire sight depends on the amount of mother's milk; so that the more numerous the puppies the later do they acquire it. In another passage[40] he states that the swallow employs celandine as an eye-salve to give sight to her young, and that it can restore vision even when the eyeballs have been plucked out. The plant blossoms, he informs us, at the time of the swallow's arrival and withers at its departure. Probably it is from these facts, approximately correct as they are, that it acquired its botanical name "chelidonium," from the Greek χελιδών = a swallow. Pliny recommends its juice blended with Attic honey as a sovereign remedy for films of the eyes, and its virtues have been perpetuated in the use of the term "chelidonia" for eye-salves. The almost dazzling brilliance with which the flower in early spring peeps out from its sombre green cushion of leaves may well have suggested its sympathetic usefulness for dim eyes. Pliny[41] asserts categorically that it was from the swallow that man learnt the use of celandine for affections of the eye, while Ælian regrets that all their labour to prepare such an eye-salve as swallows use has been in vain.

Hawkweed also enjoyed high repute in diseases of the eye. Pliny says that the hawk distils its juice into her eyes to prevent any dimness of vision, and mixed with human milk he recommends it as a cure for all diseases of the eye. It was necessary to postulate the employment of some such specific remedy to explain the marvellously keen sight of the hawk's eyes. Ælian[42] has it that "physicians use this same remedy for eye diseases, nor do they deny that they have learnt it from birds, but prefer to profit by the knowledge."

Fennel, too, stood high in favour in the treatment of diseases of the eye. Both Ælian and Pliny[43] were aware of the fact that when a snake changes its skin the discs over the eyes peel off with the rest, and appear as dry lenses in the slough. Pliny seems to say that the snake takes fennel internally to aid exfoliation, and also applies it locally to the eyes to sharpen its sight, and it was this knowledge that led to its use by man as an eye-salve. In later times euphrasia was used similarly in eye diseases, but according to the doctrine of signatures, as it has a black spot on its corolla, resembling the pupil. When Michael in "Paradise Lost" opens the eyes of Adam to see the future of the world and of his own progeny therein, he

> . . . . . purged with euphrasie and rue
> The visual nerve, for he had much to see;
> And from the well of life three drops distilled.

Ambroise Paré asserts that the operation for cataract was discovered by means of a goat with a film overlying the pupil tearing off the film accidentally when scratching itself against a thorn, and in consequence recovering its sight; but Ælian and Pliny[44] reject the accidental character of the goat's discovery. Pliny says that the female goat uses the point of a bulrush and the male the thorn of a bramble for its manipulations, but neither he nor Ælian appreciates the nature of cataract, as Pliny conceives that the cure is due to escape of blood that has surcharged the eyes, and Ælian to the escape of some morbid humour.

[39] N. H., VIII., 62. [40] Ib., XXV., 50. [41] Ib., VIII., 41.
[42] Nat. Anim. II., 43.
[43] Ib., IX., 16; and N. H. VIII., 41, and XX., 95.
[44] Nat. Anim., VII., 14; and N. H., VIII., 76.

The phenomenon of nyctalopia in man was known to the ancients, and goat's liver was eaten for its cure, as it was believed that goats could see by night as well as by day; but in the discussions of the non-medical writers of antiquity there already exists a confusion as to the meaning of the term, some taking it to mean "able to see only at night," and others "not able to see at night." It is an interesting example of the widely prevalent organo-therap of early medicine.

ANIMAL TRANSFORMATION.—FOREKNOWLEDGE OF WEATHER.

Melampus is said to have learnt the purgative action of hellebore from observing its action on goats. He used the drug with success in the cure of the daughters of Prœtus, King of Argos, who fancied themselves metamorphosed into cows, to gratify the anger of Hera. Accounts differ as to whether Melampus sent them the milk of goats that had eaten hellebore, as nowadays one might send rodagen, or gave hellebore itself, joined with certain superstitious remedies. Having regard to the action of the drug, the wonder is that the ladies were not still further confirmed in their hallucination. In this fabulous setting we catch a glimpse of the old-time belief in animal transformation, which found its most extravagant expression in the state of lycanthropy. Ovid[45] describes the transformation of Lycaon into a wolf. Aetius, Avicenna, Oribasius, and others speak of it as frequent. Burton[46] descants on the wide prevalence of this mental disorder in olden times. The idea of the were-animal struck its deepest roots in Scandinavian and North-German soil; men fancied that by donning the skin of a wolf they could become wolves at pleasure. It is less common in Greek and Latin folk-story, but a familiar example is to be found in the eighth Eclogue, where the lover, by using Pontic herbs, is enabled to see Moeris transformed into a wolf. Lycanthropes, like wolves, often lay hid during the day and at night wandered abroad, haunting the graveyards and barking and howling.

Knowledge of the action of hellebore was not the only gift bestowed on Melampus by animals. His gift of divination he owed to some serpents that he rescued from death and reared; they in return cleansed his ears while he slept, with their tongues, so that when he awoke he understood the language of birds, and so learnt the mysteries of the future that it is their privilege to foreknow. Melampus had at least one valuable remedy in his armamentarium for he cured one of the Argonauts of sterility with steel drops, administering the rust of iron in wine for ten days. In ancient medicine prognosis was esteemed as highly as healing, and man desired to share with animals, and especially with birds, their faculty of foreknowledge. Nature seemed to have endowed them with power to presage the weather by observing the skies—a gift of first importance to a primitive agricultural community. Vergil[47] mentions, as foretelling the coming of rain, the flight of cranes and swallows, the heifer scanning the face of the heavens, the clamour of rooks and of ravens, and the plaintive chatter of frogs in the fens. In Germany even now green-frogs in tall glass bottles are used as barometers; in fine weather they ascend, in wet weather they descend little wooden ladders, each step of which marks a degree. Buckland succeeded in using leeches similarly for the same purpose. Many an old maid to-day in London will tell you that her cat keeps close curled up before the fire when snow is coming.

OTHER EXAMPLES OF BELIEF OF KNOWLEDGE GAINED FROM ANIMALS.

Besides foreknowledge of the weather, man was believed to have acquired much other useful knowledge directly from animals. The ancient Egyptians believed that the art of writing had been learnt from the sacred baboons that were kept in their temples; when a fresh baboon was admitted, its fitness was tested by the priest putting writing materials into its hand and calling upon it to write. Topsel suggests that the practice of circumcision may have been learnt from them, as the young are brought forth "circumcised, at the least wise in some appearance; whereunto the priests give great heed to accomplish and finish the work begun." There is no obvious anatomical peculiarity in the prepuce of the young monkey, unless it be its great laxity permitting ready

[45] Metamorph., I., 7.
[46] Anatomy of Melancholy, ed. 1804, vol. i., p. 13.
[47] Georg. I., 378 seq.

protrusion of the glans penis, to explain this idea, and such evidence as we have seems to point to the origin of circumcision as not a medical or sanitary measure, but rather as a feature of primitive sacrificial ritual. These sacred baboons were held to have originated the division of day and of night into twelve equal parts, so as to afford a model for construction of the water-clock.

There was a widespread tradition that music had been learnt from birds, and chief among them the nightingale; in Hindoo poetry it is the kokilas, the Indian cuckoo, that teaches melody. Birds are often credited with bringing down fire from heaven; in Polynesia it was a red pigeon, in French folk-lore the wren. The tale runs[48] that all the other birds, except the owl, contributed a single feather apiece to replace the scorched plumage of the wren, so as to keep it warm in the coming winter. For its ill-nature the owl was condemned to eternal seclusion during the warm day, and to perpetual suffering from cold during the night, and the other birds maintain the punishment by pestering it if it appears in sunshine. Every nation has its Prometheus; in Greek legend it was a man, among the North American Indians a stag; but the myth never tells how the fire was produced, in conformity with the circumstance that the maintenance of fire accidentally produced seems always to have antedated the discovery of how to produce it.

It would be interesting to hear the chatter of the native East African over the domestic meal after watching an aeroplane soaring in the sky; he would probably recognise in its movements, its outline, and its mode of propulsion another gift of knowledge from birds to man, confusing what is in part due to imitation with what appears to be due to instruction. Ælian[49] asserts that birds know all the remedies that man employs; he cites the application of marjoram to their wounds by partridges, storks, and pigeons. Pliny,[50] too, gives a list of purgative herbs used by birds, but, if we can be sure of their identity, few, if any, possess the properties claimed for them.

The sedative properties of lactucarium, or lettuce, were widely accepted; Aristotle and Ælian[51] state that it is used by the dragon to relieve a distended stomach. Venus was said to have lulled her grief at the death of Adonis and repressed her desires by throwing herself on a bed of lettuces. Experiment has failed to show any sedative action in the juice of lactuca, and belief in its hypnotic properties is probably due to the similarity in appearance and smell to the juice of the poppy.

Fallopius[52] asserts that the ape taught man the laxative properties of cassia, and in view of the fondness of monkeys for fruit it is not impossible that man may have observed its laxative effect.

Cytisus[53] was believed to possess important galactagogue properties, and was given to cattle for this purpose. Aristomachus, an Athenian medical author, recommended that an infusion of the plant, mixed with wine, should be given to nursing women when their supply of milk was deficient. The active principles of cytisus are sparteine and scoparin, neither of which is known to possess galactagogue powers. Scoparin produces some amount of diuresis, probably by action on the renal epithelium. Possibly the flow of milk might be increased if the juice were given in great dilution, or if its bitterness induced free drinking of water.

Dogs were said to have taught man the use of pellitory for expelling calculi; one wonders whether the belief may have arisen in an attempt to explain the name.

ANIMALS AND KNOWLEDGE OF NATURE OF FOOD.

If man learnt the use of drugs from animals, he must have paid a price in some cases for his knowledge. Thus horses eat aconite with impunity; birds, rabbits, and many herbivora belladonna, and its effect on horses and donkeys is but slight. Goats, sheep, and horses eat hemlock without ill-effect, yet it poisoned Socrates. Henbane has little effect on sheep, cows, pigs, and pigeons, and ipecacuanha does not excite vomiting in rabbits.

Animals seem to acquire their knowledge of poisonous plants from experience, and not by any innate instinct; our domestic animals, when transported to other countries, at first eat poisonous plants, which they learn afterwards to avoid. Snell observed that strange sheep frequently fell victims to the poisonous hellebore that grows abundantly in the valley of the Ahn, but that it is carefully avoided by the sheep of the neighbourhood. Pliny[54] was evidently aware that cattle did avoid certain poisonous plants, and he instances the anagallis as one; but he goes further and asserts that if they eat it by mistake they have a remedy at hand in a plant that is an antidote. Lambs and calves, grazing in the same field as their mothers, are far more prone than they to eat poisonous plants. Morgan[55] concluded from observations of feeding young birds with various caterpillars, beetles, and worms, that, in the absence of parental guidance, young birds have to learn by experience what is good to eat and what is not, and that they have no instinctive aversions. At first they peck at everything, but once they have found that a particular thing is distasteful or harmful, in future they entirely avoid it. Tegetmeier found that pigeons reared exclusively on wheat or barley would starve before eating beans; but if a bean-eating pigeon were introduced among them they would soon imitate and adopt the habit, instinct yielding to experience; in the same way fowls sometimes refuse maize, until they are placed with maize-eaters, when they not only eat it, but become exceedingly fond of it. Newly caught birds are apt to starve unless the cage-food is mixed with food to which they are accustomed. Each bird seems to make its own observations, its own experiments, and its own discoveries in the matter of food, and the rapidity with which knowledge acquired may be propagated is shown by the readiness with which the habits of other members of the species are imitated.

The taste for meat is not infrequently acquired by herbivorous animals, and once acquired may amount to a veritable passion. Parrots[56] that have lived on insects and berries have been known to acquire such a liking for meat that they have actually pecked to death animals as large as sheep and porpoises, so as to eat their flesh in place of their habitual food. Horses will take to flesh-eating, and have been known to snap up young pigeons and chickens; meat diet is said to render them savage. Reclam[57] saw squirrels and rabbits gnaw greedily bones thrown to them, though they had abundance of vegetable food; both Darwin and Brehm record instances of cattle taking to a diet of fish on certain islands when pasture failed them.

FOODSTUFFS IN PRIMITIVE PHARMACY.

Man, doubtless, will have acquired much of his knowledge of the nutritive and medicinal value of plants by the same method as the lower animals, by experience. Like them, too, he will have profited by imitation, and imitation embracing his observation of the habits of the lower animals. It must have been of immense importance to man, when he depended largely for food on wild animals captured in the chase, to watch them closely so as to know their habits. Baited trap-holes, being one of the chief modes of capturing game, a knowledge of the favourite foods of animals must have been a first condition of success. This, together with his passion for their domestication, to be at once his companions and his servants, must have given him an intimate knowledge of their foods and their effects. Further, there is not wanting evidence that he did use animals and even his fellow[58] men as subjects of research in this field, for the Philippine pygmies, if they fancied a fruit were poisonous, would soak it for two or three days, and then give it to one of their dogs; if he seemed none the worse, they would eat it themselves. The American Indians first tested arrow poisons on the old women of the tribe.

That a good deal of man's medicinal knowledge arose accidentally in his efforts to extend the range of his food-supply is suggested by the prominent place occupied by foodstuffs in primitive pharmacy. Honey, milk, butter, and cheese appear and reappear in every conceivable combination. We shall be less likely to underrate the importance of honey in the dietary of primitive man if we bear in mind that it was his only readily available supply of sugar. Honey and the honey-bee were surrounded with a sacred halo of mystery in the mind of the primitive zoologist. He believed the bees to be generated from putrid flesh, just as fish and frogs seemed to be generated from the mud, when the rain filled the pools with water. This was not an unnatural

[48] Watkins: Gleanings from the Natural History of the Ancients.
[49] Nat. Anim., V., 46. [50] N. H., VIII., 41.
[51] H. A., IX., 6, and Nat. An., VI., 4.
[52] Purg. Simpl., 35. [53] Pliny: N. H., XIII., 47.
[54] N. H., XXV., 92. [55] Habit and Instinct.
[56] Buchner: Mind in Animals.
[57] Mind and Body, 1859 p. 300.
[58] Zuniga: Franciscan Chronicle, 1738; and Scott-Elliot: Prehistoric Man and his Story.

belief, for he saw the maggot-like larvæ in the honey-comb, and they seemed to him for all the world the same as the maggots engendered in fly-blown putrid meat. Pure honey, engendered in the air, might be found in its elemental purity at dawn deposited on the leaves of trees and elsewhere; how else can we account for the deposit on the leaves of the lime? Pliny[59] speculates as to whether this liquid is the sweat of the heavens, or saliva emanating from the stars, or an exudation from the air, purified in the process of distillation. Ah! if only it came to us limpid and untainted, as when it set forth on its downward path, before it is corrupted by exhalations from the earth or by the admixture of the juices of flowers and by elaboration in the stomach of the bee! Pliny[60] describes various kinds of honey with the gusto of an up-to-date apiarist, but he awards the palm to summer honey, for "Nature has revealed in this substance properties most valuable to mortals ..... for, after the rising of each constellation, and more particularly those of the highest rank, or after the appearance of a rainbow, if a shower does not ensue, so that the honey-dew becomes warmed by the rays of the sun, there is produced a medicament, and not real honey, a gift sent from heaven for the cure of diseases of the eye, ulcers, and maladies of the internal organs. If this be taken at the rising of Sirius, and this should happen to fall on the same day as the rising of Venus, Jupiter, or Mercury, as is often the case, the sweetness of this substance and the power it possesses of restoring men to life are not inferior to those attributed to the nectar of the gods." Long before the time of Pliny men were aware of the occasional poisonous properties of honey, and rightly attributed them to the flowers from which the honey was gathered. Xenophon records the toxic effect of the honey at Trebizond on some of the Ten Thousand, which has usually been referred to the Azalea Pontica and Rhododendron Ponticum, which abound in that neighbourhood; poisonous honey is met also in Pennsylvania, gathered from Kalmia latifolia. All the stories of Mithridates having been the discoverer of antidotes seem to be referable to the knowledge that many poisonous plants grew in his kingdom on the shores of the Euxine; as ducks were seen to feed on the herbage with impunity, it was not unnatural that their blood should be regarded as an antidote to poisons.

Mixtures of honey with milk or butter are favourite dishes of the Arabs and Hindoos, and recall the Biblical injunction, "Butter and honey shall he eat." Honey is much used in India in ointments in place of animal fats, which putrefy readily in hot climates. In this country it has been used as a vehicle for drugs, as in mel boracis, or as a palatable addition with mildly laxative effect in confectio piperis. For centuries it has been used as a local application to the aphthæ of children, and Soranus attributes this not to its inherent medicinal qualities, but to the fact that it was taken from hives near the tomb of Hippocrates.

Milk was much used as a vehicle for drugs and butter as an ointment or the base of an ointment, while Zoroaster seems to have anticipated Metchnikoff by living 30 years in the wilderness upon cheese prepared in such a way as to render him insensible to the advances of old age.

Some substances probably found their way into medicine for no better reason than that they were generally ready to hand. Anyone who has lived among the sons of the soil or among fishermen on remote coasts must be familiar with the tendency to use both internally and externally whatever is first to hand. I have seen a farmer pick up a handful of dust and mix it with dung from the hen-roost and then apply the mixture to a sore on a sheep's back; cobwebs are used to staunch the bleeding of a cut, and so is tobacco; leaves are used in the West Indies as plasters and as dressings; and I am not at all sure that dung pharmacy, for all its later elaboration, may not owe its origin in part to this tendency.

Magic was another prolific parent of medicinal remedies; the Echeneis is a good illustration of one introduced in obedience to the dictates of sympathetic magic. This genus of sucking fishes has on its head an adhesive disc by which it attaches itself to sharks, turtles, and other marine animals, and in default of these to ships. Its object seems to be to ensure an ample supply of food by increasing its range of locomotion. Its retarding effect on the bodies to which it attaches itself seemed to suggest the desirability of its use for the same purpose in medicine. We learn from Pliny[61] that it was used in love philtres, apparently to prevent the affections from wandering, and in obstetric medicine to check bleeding from the womb, to prevent procidentia uteri, and to delay premature birth.

[59] N. H., XI., 12. [60] Ib., XI., 14.

POISONS AND THEIR ANTIDOTES.

In the matter of poisons and their antidotes, it was believed that man had learnt many valuable lessons from animals. The poisonous bite of the serpent and the source of its poison were bound to excite speculation. Ælian[62] lays it down that animals acquire poison by feeding on poisonous things; thus the sting of wasp, he says, is far more dangerous if it has tasted a viper, and a fly, if it has touched anything of the kind, has a more harmful bite and causes greater pain. Homer[63] depicts the dragon lying before its lair eating baleful herbs, and Vergil[64] paints the same picture of the snake. Numerous antidotes to the snake's poison were in use. Pliny[65] says that the plant chondrion, the identity of which is obscure, was employed with good effect, as field-mice were known to eat the plant when bitten by snakes. The same writer[66] asserts that the tortoise eats the plant known as cunile bubula so as to recruit its powers of effectually resisting serpents, and he recommends the juice of the plant in wine to be taken internally, and the bruised leaves to be applied locally for their bite. Aristotle[67] says that the tortoise, when it has eaten a snake, feeds on marjoram, and he declares that one was seen to do so repeatedly during its repast; seeing this the observer rooted up the marjoram with fatal results to the tortoise. Some of the larger tortoises and turtles do prey on small reptiles, and this must have seemed to call for explanation to those who were familiar for the most part with the herbivorous diet of the smaller land species. The tales of the weasel and the ichneumon in this connexion seem to be all referable to the mongoose. Lyddeker identifies the ichneumon with the Egyptian mongoose, and the similar appearance of the weasel not unnaturally led to confusion. Both Pliny and Ælian[68] say that the weasel protects itself against the serpent by eating rue, but recent experiments tend to show that the weasel will not attack serpents. Wilkinson, in his "Ancient Egyptians," says that an Arab assured him that the ichneumon is very dexterous in killing serpents, and that, whenever bitten, it has recourse to a plant, of which it eats part and applies part to its wound, and then returns revived to the encounter. According to Lindsay,[69] the Indian mongoose, when poisoned by a snake-bite, uses Mimosa octandra as an antidote; the mongoose plant, Ophiorhiza mungos, is used for the same purpose in India. Most countries have their particular antidotal snake-root; in North America and Canada the roots of Liatris spicata, Eryngium aquaticum, Eupatorium altissimum, and Asarum Canadense are all in favour; and elsewhere Aristolochia serpentaria, Polygala Senega, and Cimicifuga racemosa have all been used for the same purpose. Most of these contain active principles, which in warm decoctions induce diaphoresis or diuresis, the idea being that the poison will be eliminated by the skin or kidneys.

Spider's venom was regarded with only less fear than that of the serpent. The tale was told that the toad, when bitten by a spider, ate the leaves of the greater plantain, and succumbed to the bite when these were not available. Deer were said to protect themselves from the poison by eating crabs.[70] The victims of that epidemic form of convulsive hysteria known as tarantism, which flourished over wide areas more particularly in Italy, believed themselves to have been bitten by the tarantula spider. So ingrained was this belief that Constantine the African, the most learned physician of Salerno, stated that those who were bitten were liable to eject from their stomach and bowels substances resembling a spider's web. It was nevertheless not an animal venom, but a mental poison that was propagated from person to person in a human soil sensitised by long years of pestilence and warfare. The efforts of the victims to cure themselves by wild dancing, excited and maintained by the music of the flute, may be regarded as rational therapeutics according to

[61] N. H., IX., 41. [62] Nat. Anim., IX.,
[63] Iliad, XXII., 93. [64] Æneid, II., 471. [65] N. H., XXII., 45.
[66] Ib., VIII., 41, and XX., 61. [67] H. A., IX., 6.
[68] N. H., VIII., 41, and Nat. Anim., IV., 4.
[69] W. Lauder Lindsay: Mind in the Lower Animals, ii., 384.
[70] Aristotle: H. A., IX., 5; and Pliny: N. H., VIII., 41.

the notion of the day, for clearly the chemical poison should find an exit in the sweating provoked by the violent exertion of the dance. Just so, when disease is conceived as due to a demoniac mannikin within the sufferer, savages resort to violent bodily movements to effect its expulsion.

These various legends of the effect of spider's venom on animals and man rest on the most slender basis of fact. It is true that all spiders have poison-glands which communicate with fangs in the mandibles, but the smaller species are quite harmless to man and the larger animals, and it is open to question whether their poison plays an important part in the killing of insects. With regard to the tarantula there is little evidence to show that its bite can cause more than local irritation in man and other large animals; this, of course, in rare and unfavourable circumstances, may be the starting point of a secondary generalised poisoning. Some of the larger spiders can undoubtedly kill small birds and animals, but Warburton [71] holds that this is due to the unerring accuracy with which they drive their jaws into the vital nervous parts of their victims. Fabre, on the contrary, insists that death does not depend on the bite involving a vital part. There were some apparently, even in the seventeenth century, who did not believe in the poisonous effect of the tarantula's bite, for Ferdinando, a physician of Messapia, considered the symptoms to be those of a melancholy dependent on the imagination.

EVIDENCE OF HEALING PRACTICES AMONG ANIMALS.

We may now pass from the domain of legend to the more prosaic consideration of such substantial evidence as there is of the existence of healing practices among animals, and we shall find it disappointingly slight.

Livingstone left it on record that some of the anthropoid apes staunch bleeding by pressure with their hand on the wound or by stuffing it with leaves, turf, or grass. Dr. Thomas Savage has recorded the same practice of the chimpanzee. Moore [72] extends the range of action to the young in the case of a female monkey which tore leaves from the trees as it fled with its wounded baby in its arms and stuffed them into the bullet wound to staunch the bleeding. Darwin [73] notes that the long-armed apes sometimes use their arms as crutches, swinging their bodies forward between them. The smaller monkeys exhibit considerable skill in the extraction of thorns. They search themselves for parasites and assist their comrades by searching the head and such other parts as each is unable to reach for itself. When a flea is caught they examine it critically and then swallow it. Darwin mentions an idiot who, in searching for lice, supplemented the use of his hands with his mouth. Frobenius [74] describes a family party of natives in North Congo seated round a fire searching each other for pediculi; when one was found the captor grimaced cheerfully and hurriedly conveyed it to his mouth. Moore tells of an orang-outang that was once bled for some illness which, whenever afterwards it was ill, would point to the vein in its arm, as though he wished the operation to be repeated; there is a reliable record of a monkey which similarly appealed for administration of a clyster. These records serve at least to show how readily monkeys learn to appreciate a remedy by which they have benefited. As we descend in the scale of creation, we cease to find any sure indications of the existence of a therapeutic sense; it is more than doubtful if we can refer the licking of wounds or the eating of grass by dogs to this category.

Cats exhibit a keen sense of maternity, and a mother-cat will sometimes attend fondly on its daughter during the birth of its kittens. Cabanés says that they have been known to bite the cord and carry off the kittens to their own nest and there lick them clean. I myself can testify to what appeared to be an exhibition of the keenest sympathy of one female cat to another in these circumstances, anxiously brooding over and licking the expectant mother; but it may well be that this was no more than the prompting of a confused maternal instinct.

Cabanés [75] has some wonderful tales of avian surgery, so wonderful that, for all his sincerity, they would seem to call for further investigation before acceptance. He cites M. Fatio as authority for the statement that woodcock, corncrakes, and snipe have been known to pluck their feathers and make most elaborate dressings for wounds and for fractured legs. In another instance he alleges that a blackbird with a broken leg, failing in its own efforts to dress the fracture, summoned its companions with a cry and then ligatured it admirably. It is not difficult to see how a wounded and bleeding leg may acquire an adhesive dressing of feathers without postulating the purposive use of the bird's beak in providing it, and still less a summons to other birds to assist at the operation. Anyone familiar with wounded game knows how frequently a matted tangle of blood and feathers is found adhering to a wound. In another case Cabanés mentions a quail found in Savoy with its left leg broken above the ankle. It was wearing a dressing composed of blades of grass rolled circularly round the site of fracture and bound to one another; the whole formed a lump the size of a hazel-nut, and in spite of the riding of the ends of the bones good union had been obtained. Here, again, it seems easier to imagine an accidental winding of grass-blades round the broken ankle in the bird's frantic efforts to liberate the hanging foot caught in the grass.

That auscultatory percussion is practised by birds and other animals is beyond question, yet it can hardly be argued that man adopted the practice from them. Woodpeckers, nuthatches, and tree-creepers tap the bark of trees to see if it emits a hollow sound; if hollow, they continue to tap till any insects emerge; in the same way the aye-aye lemur taps the bark in search of caterpillars, and employs its finger as a probe to search for them.

From all this there seems to emerge a strong presumption that below the level of the monkey tribe a healing sense is not existent, and only among the anthropoids is there unmistakable evidence of even a lowly stage of its development. In what I have said I have intentionally limited my remarks to curative medicine, but there remains a further fascinating chapter of animal anticipations of sanitary science, with which we will deal on a future occasion.

[71] Cambridge Manuals, "Spiders."
[72] Universal Kinship. [73] Descent of Man, Pt. I., ch. ii
[74] Childhood of Man.
[75] Bulletin Général de Thérapeutique, 1912.

WARFARE ON THE BRAIN.[1]

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"WARFARE on the Brain," a title which allows me a wide choice of subjects for discussion, was selected not on account of a wish to discuss many subjects, but because it embraces both the psychical and physical injuries inflicted by warfare upon the highest part of the nervous system. There can be no medical man in this country at the present time who is not being constantly brought in contact with these psychical and physical injuries and who does not appreciate the difficulties which surround their proper interpretation and their proper treatment.

This paper represents an attempt, made for my own instruction as much as anything else, to crystallise some of the ideas I have formed with regard to the solution of these difficulties, and especially in relation to their practical aspect. Pretending to no profound knowledge of psychology, I shall not attempt to discuss abstruse psychological problems or theories, and I shall hope to be forgiven if my inability to understand the precise meaning of some psychological terms and expressions leads me to their misuse. For the most part my remarks will deal with the principles of diagnosis and treatment which, as the result of experience, I have come to regard as important, and my subject will be divided into two parts under the subtitles of (1) Shell Shock and (2) Traumatic Epilepsy.

Shell Shock.

This unfortunate and much-abused term has been allowed to cover a multitude of sins, to shelter a mass of ignorance, and to inspire the public with the belief that a new disease has been added to our already long list, the responsibility for which lies with the originators of Armageddon. No attempt to treat these cases affords any hope of success until it is realised that the name on their labels covers a number of different conditions and until some effort is made to identify

[1] A paper read before the Harveian Society of London on Nov. 2nd, 1916.

and classify the varieties. The process of identification and classification of any particular case is a comparatively simple matter if anything like an accurate account of the patient's experience and past history is obtainable. The difficulty arises when these are not forthcoming, and a diagnosis has perforce to be postponed until sufficient time has elapsed for observation or until data can be collected from other sources. It must be remembered that the patient's own account may be entirely misleading, even more so than it often is in ordinary cases of illness or of injury. In particular it is frequently impossible to decide on the evidence given by the patient whether he has received a psychical or physical injury or both, to whether he has passed through a period of unconsciousness or only one of amnesia. Let me make at once a crude effort to enumerate and describe briefly the various conditions which are frequently met with and labeled as shell shock.

First of all, there are what we may call the pure exhaustion cases. These are men who, starting with an average allowance of resisting power, after a more or less prolonged exposure to the strain of warfare, become restless, irritable, depressed, sleepless, and lacking in attention and concentration. If this condition is recognised in an early stage by the medical officer and rest ordered a comparatively short period will suffice for the patient to regain his normal health. More often the patient refuses to acknowledge his condition until some crisis occurs in the shape of a severe bombardment, an attack of illness, some extra responsibility, or perhaps some personal anxiety or disagreeable incident. Then he is sent home in a more or less advanced condition of "neurasthenia," and something like six months' respite from active service becomes necessary. Naturally each individual has his own allowance of resisting power, and consequently the periods of strain which each can endure vary very considerably. On the other hand, there may be complicating factors which modify the case, of which one of the most remarkable is alcohol. There is no doubt that those men who look to alcohol for support and recuperation fail earlier than those who realise the treacherous nature of its assistance. The same applies to the less frequent abuse of drugs for similar ends.

The proper treatment of exhaustion cases is obviously rest in bed in quiet surroundings. Nevertheless, the patient is generally very reluctant to recognise this, and his feeling of restlessness, often accompanied by a desire for distraction which he regards as the best antidote for his depression, leads him to the opposite extreme, with the result that, unless he is taken properly in hand, he goes from bad to worse and after a month or two at home is much more exhausted than on his return from the front. I regret to say that some of these patients are badly advised in that they are allowed up too soon and sent to their homes with a recommendation to take at once plenty of exercise in the fresh air. Such a remedy for exhaustion is not unnaturally responsible for the prolongation of symptoms, and I come across not a few patients who have wasted a lot of valuable time in pursuing this method of regaining health. Over and over again have I encountered dismay and even indignation on the part of the patient for whom I have advised rest in bed as the only remedy for his complaint, and many a time have I been thanked later for my insistence on the advice being carried out.

The common fallacy that lack of sleep at night in an exhausted patient must be met by letting the patient tire himself during the day has to be exposed and explained, and the fact that a sleepless patient suffers little real harm if he is resting in bed often needs emphasising. The prognosis in this class of case is very favourable under proper conditions of treatment, but the period of rest required varies with constitutional idiosyncrasies and with the degree of exhaustion presented when the patient is first seen.

Next to the pure exhaustion cases should be considered those patients who have inherited neuropathic or psychopathic tendencies and in whom the process of exhaustion has excited these dormant tendencies into activity. These form a large group, a fact which should occasion no surprise when it is remembered that the Army is recruited in this war from the population as a whole without any attention being paid to the hereditary or constitutional fitness of the recruit to stand strain or fatigue. In this group we may place many patients who exhibit either for the first time or in the form of a relapse such phenomena as tics, articulatory defects, epilepsy, or phobiæ on the one hand or more serious forms of insanity on the other. The tics and stammers are frequently found in patients who have been subject to similar troubles earlier in life and can generally be cured, after a suitable period of rest, by the re-educative methods usually employed. Other phenomena require their appropriate treatment, but very few of the patients belonging to this category should be sent back to active service; many are best dealt with by return to civil life and some are suitable for the less strenuous military duties of home service.

Reference may next be made to a comparatively small class of what we may call "martial misfits." These are men who are compelled to join the Army by public opinion, who may pass as normal individuals in ordinary life, who are quite aware that they cannot stand the strain of warfare, and who are often quite frank in confessing all these facts to the medical man who attends them on their return from the front. Some of them will tell you that they have entertained quite a keen curiosity as to the length of time they could remain in the fighting line, and at least one has told me that this question was a matter of chaff and even of a bet between him and his companions in the days of their training. Their stay at the front is, as a rule, too short to produce very severe or lasting symptoms, but they are quite convinced, and rightly so, that any attempt to return would only lead to a similar result. They are glad to have "done their bit" and they would like to continue in khaki until the end of the war, but I have no doubt in my own mind that they would really be serving their country better as civilians.

So far I have confined my attention to the case of soldiers who have not suffered the direct effects of shell explosion or in the case of whom such a shell shock, of more or less severity, has only been one factor, perhaps the culminating factor, in bringing them under medical care. We must recognise in addition the normal healthy individual who suffers from concussion as the immediate result of a too close intimacy with a shell explosion and who reacts in the same way as do most patients to a severe blow on the head. The period of unconsciousness is followed by a more prolonged period, during which the patient evinces symptoms similar to those of exhaustion. He is easily tired, irritable, over-reactive to auditory and visual stimulation, lacking in confidence and concentration, and often depressed. He suffers from headache, insomnia, or fighting dreams, and in brief resembles the exhausted patients I have referred to already. This resemblance is not confined to his symptoms, but extends to his treatment, and I do not think that one can emphasise too strongly the importance of prolonged rest in bed in all cases of severe concussion attended by loss of consciousness, even in the absence of any evidence of a fractured skull or of neurological signs. As a physician, I am convinced that I should see considerably fewer patients suffering from the after-effects of head injuries if other practitioners, and even surgeons, were at one with me on this point. In my military wards and in my practice I make a general rule that all cases of severe head injury, however quickly they appear to lose their symptoms, spend at least four weeks in bed.

Here I should like to say a few words about diagnosis. In these days, when so many cases suffering from shell shock without apparent physical injury pass under observation, it is very easy to overlook the exceptional patient who has sustained some definite local damage to his brain. Let me give you an instance. In August, 1915, an officer was blown by a shell a distance of many yards and lay unconscious for a few minutes. He found himself unbruised, regarded himself as merely shaken, and carried on with difficulty for 24 hours. Finding his legs unreliable he then went sick, and was sent home as a case of shell shock. He remained a case of shell shock until February, 1916, when I first saw him. He could then walk five or six miles without much difficulty provided the ground was smooth. He complained, however, that rough ground was too much for him, that in going downstairs he always took the step with his left foot rather than his right, and that the latter had a way of turning in unless he looked after it. I could find no loss of power, no alteration in the reflexes, and no disturbance of superficial sensibility. Further examination, however, showed that his sense of position and movement in regard to his right foot was faulty, that he could not balance himself on that foot, and that he could not appreciate the vibration of a tuning-fork on that foot as well as he could on the other.

Superficial investigation of his head revealed nothing, but an X ray examination showed a slight fracture, without decompression, in the left post-Rolandic region near the middle line of the skull. On further inquiry it appeared that his helmet was bashed in over a corresponding area. This was clearly a case of severe bruising of the brain over a well-defined spot, severe enough to produce symptoms still recognisable six and, as events turned out, at least eight months later. This case serves to emphasise a fact which it is very useful to remember—namely, that superficial injury of the sensory cortex does not give rise to ordinary anæsthesia or analgesia, but to disturbance of deep sensibility such as can only be detected by testing the sense of posture and movement, the sense of vibration, and so on.

Much of professional and public interest in shell shock has been centred on another group of cases which attract attention on account of their more theatrical attributes. I refer to the patients who suffer from so-called functional paralysis, anæsthesia, mutism, aphonia, deafness, blindness, &c. If it were not for a certain amount of obloquy attaching to the word I should not hesitate to class them all together under the name of hysteria. I fail to find any essential difference between such cases arising out of the psychical and physical injuries of warfare and those with which we are familiar in civil life, and especially in that part of our civil work which has to do with insurance and medico-legal problems. In both groups we are constantly confronted with the same questions. Is the patient consciously assuming some disability or is the latter completely outside his ken and his control? In other words, is he malingering or is he not? It is generally assumed by writers on this subject that the answer must be Yes or No, and it is only rarely allowed or even hinted at that the truth may be found somewhere between the positive and negative reply. My conception of a malingerer is a person who with a perfectly clear and well-balanced mind confesses to himself quite frankly that for some definite purpose he will assume a certain disability. My belief in the general honesty of the human mind leads me to the conclusion that such persons are extremely rare. But I am obliged, especially by lawyers, to state that a patient is either malingering or is suffering from a functional disorder, and by the latter term I am supposed to indicate that the origin of his disability is entirely outside consciousness and totally independent of volition. I do not pretend to understand all the subtleties of consciousness or all the workings of volition, but I cannot acknowledge any satisfaction in overcoming these difficulties by an appeal to a subconscious mind or to a process called involuntary inhibition. There are several questions which I should like to refer to as having some bearing on this difficult problem.

In the first place, is it not a mistake to suppose that the majority of patients exercise any clear reasoning in what they do or what they say? Are not most of their acts and words the result of vague and instinctive ideas hovering in and around their realm of consciousness? Education, especially a scientific education, serves to diminish the extent to which we are influenced by such ideas; but are not the most educated constantly led astray? It seems to me almost an act of cowardice to plead that this or that act or word, to which we have committed ourselves and which cannot be defended by reason, must be laid to the account of our subconscious mind.

I am told that a "fixed idea of paralysis" as an explanation of a functional palsy belongs to an effete psychology, and I quite agree that any attempt to fix such an idea on any particular part of the cortex is not to be tolerated. But the more I see of these cases the more convinced am I that an idea—a *conscious* idea—plays some, it may be in a totally confused and illogical manner, yet all the same plays some, part in the production of all these hysterical phenomena.

Colonel C. S. Myers, R.A.M.C. (T.C.), in the course of an extremely interesting paper[2] on functional disorders of speech and allied subjects, comes to the conclusion that two kinds of inhibition are discernible, the one due to a blocking of the paths that subserve the mechanism of articulation or phonation, the block producing the quasi-paralysis of functional mutism or aphonia; the other due to a blocking of the paths that control and coördinate their mechanism, the block producing the quasi-spastic or clonic or ataxic conditions of functional dysarthria. Other writers have made similar attempts to localise the seat of trouble, and one has heard vague references to bilateral lesions of the third frontal convolution as an alternative. Much as I admire the work of these authors in most respects, I find myself entirely opposed to any such attempts to localise anatomically what appear to me to be essentially disorders of the mind in the present state of our knowledge or rather in the present state of our ignorance. How can we possibly explain the incidence of these disorders on any anatomical basis? We all knew the expressions "struck dumb," "struck blind," "struck helpless," "deafened" before the war, but we never heard of anyone being "struck tasteless," "struck dysphagic," or "struck incapable of mastication." How is it, then, that the deaf, the dumb, the blind, and the paralysed are numerous, and that soldiers who cannot taste, swallow, or masticate are practically non-existent, *unless* some idea—some conscious idea—plays some, however small, part in their incidence?

Again, what can be the significance of the almost universal rule that soldiers suffering from really serious injuries do not display any of these so-called functional or hysterical disorders? Are we to believe that an entirely unconscious psychical process can explain such a striking feature of warfare? For nearly 18 months I have had charge of a ward devoted almost exclusively to severe injuries of the brain, spine, cord, and peripheral nerves, and I cannot remember a single instance in which the neurological symptoms have been complicated by functional disorders of the kind I am now discussing.

Colonel Myers, who has seen large numbers of mute soldiers, calls attention to the rarity of mutism resulting from shell shock amongst officers, and I believe he says that no instance of the kind has actually come under his observation. As it happens, I have seen one mute officer who had been subjected to a severe shell explosion and who came under my care as soon as he entered a London hospital. Let me give you the story of his case in a few words. I saw him on the afternoon of the day he arrived and found him completely dumb, but ready to afford me all information by means of writing. After a short examination, during which I did not display a great deal of interest or surprise in regard to his inability to talk, I gave the nurse in charge, in the presence of the patient, my instructions that no visitors should be allowed until his speech had returned. The patient, who had a young wife and a baby he had not yet seen, was talking quite freely the next day, a cure which he attributed to knocking his head against the rail of his bed in the morning. I cannot help wondering whether my instructions to the nurse or the alleged blow on the head exerted the more active influence in removing the block on the paths that subserve the mechanism of articulation or phonation. It may be asserted by some that this was clearly a case of malingering, but I should not support that view if the definition of malingerer resembles at all that which I have already suggested.

It appears to me that the fact that so few officers suffer from mutism as compared to the rank and file may possibly be explained by their superior education and knowledge. When we remember what an extraordinary state of mental confusion and jumble is produced in so many of our patients by a simple cross-examination of the history and the nature of their ailments or of their injuries, how hopelessly they mix cause, time, and effect, and how thoroughly satisfied they are with their own perfectly impossible reasons for this and that symptom, I do not find it difficult to believe that the psychical and physical injuries of warfare may so disturb the *conscious* mind as to lead to the production of these hysterical phenomena. I quite agree with Colonel Myers when he says that in practice "every grade of transition may be met with between quite uncontrollable functional disorder and sheer purposeful malingering," and I would go further and say that in every case a conscious idea more or less confused and more or less self-confessed is an important element in each instance.

With regard to the sudden recoveries of speech in mute patients, I hold the view that, in many cases at any rate, the exciting causes to which they attribute their almost miraculous cures are incidents which they choose and sometimes invent for the purpose, and that probably they have previously discovered not only the fact that speech

[2] THE LANCET, Sept. 9th, 1916.

is possible, but have also realised an urgent desire to recommence normal communion with their fellows.

Probably Colonel Myers is correct in describing a state of stupor immediately following a severe shell shock in which the mind is so dazed and absorbed by terror, or by the vivid impression of incidents recently experienced, that communion with the outside world is really impossible, and it is probably during the recovery from the stuporose condition that those conscious ideas which form the basis, or are, at any rate, an important factor in the prolongation of mutism, come into being.

With regard to the treatment of all these hysterical phenomena my experience leads me to believe that any form of suggestion, whether applied under normal conditions or under the influence of anæsthetics or hypnosis, may be successful, but that success depends first of all on the willingness of the patient to recover, and secondly on the adequacy of the suggestive stimulation. There is, perhaps, one other precaution which should be taken by any medical man who has to treat these cases, and that is, while displaying a sympathetic understanding of the patient's story and complaints, not to express surprise or too obvious a spirit of scientific interest; more important still, to refrain from discussing or demonstrating the patient's disabilities before others. In the case of a mute it is not good for the patient to hear that he can't talk; it is not fair to him to say that he won't talk; in the present state of our knowledge it is best for everybody, and for science, to be content with the simple statement that he *doesn't* talk.

I should not have spent so much time and so many words on this part of my subject if I did not feel strongly how important it is for every one of us to make a clear distinction between what are called neurological lesions and mental disorders, between lesions which can be localised anatomically and disorders which belong to the realm of ideas, and which we in our ignorance can only conceive as having their origin somewhere in the highest centres of the nervous system. Hysteria is a *mental* disorder, and, however localised its physical manifestations, everything points to the mind as its source. There is much confusion on this point, even amongst medical men, and perhaps this confusion is no more strikingly illustrated than in the matter of "spinal concussion." This term has been used in two senses. It is used to describe a functional paraplegia resulting from an injury, but if it is so used it should never be forgotten for a moment that the disorder responsible for the paraplegia is a mental disorder and not a disturbance of function at any level of the spinal cord. On the other hand, true cases of concussion of the spinal cord can always be recognised by careful investigation, and any foci of hæmorrhage or softening which result from concussion more or less exactly localised.

Let me draw this distinction as graphically as possible by means of two cases. In the early days of the war a lad of about 19 was blown up by a shell and sent home apparently completely paralysed from the waist downwards. When he came into my ward he had already spent ten months in other hospitals, always nursed with the greatest care, lying on a water bed, with his penis in a urinal, smoking innumerable cigarettes, and eating countless chocolates. He was accepted into my ward as a hopeless paraplegic, and I found him lying as I have described. He did not move his legs when invited to do so, and these limbs were much wasted and quite flaccid. The knee-jerks were elicited with difficulty, but the plantar responses were flexor in type. In spite of the fact that there was complete anæsthesia to all forms of stimulation from the umbilicus downwards, the abdominal reflexes were preserved and there was no shifting upwards of the navel when he made the attempt to sit up. On further inquiry I found that there was no real incontinence and that he passed his urine at intervals into the vessel placed for its reception. This was a case which might be called one of spinal concussion, but is better described as one of hysterical paraplegia. I directed my treatment not to his spinal cord, but to his mind. Isolation, the stoppage of tobacco and all visitors, the assurance that he would rapidly get well, together with some suggestive faradisation of his legs, brought about a cure in a very short period, although some time elapsed before his atrophied legs were strong enough to give him any great degree of activity.

By way of contrast, let me relate the history of another patient whom I saw a day or two ago. A young officer was hit in the back by a piece of shrapnel and fell paralysed in all four limbs. After a few minutes he had recovered sufficiently to get up and he walked more than a mile to his dressing station. When he reached a London hospital he complained of nothing except his wound, which was already well on the road to healing, the foreign body having been removed in France from the muscles of the back near to the left side of the upper dorsal spine. He remained in hospital long enough for this wound to heal and then went to a convalescent home. On his return I saw him because he complained that when taking a bath he could not feel the temperature of the water with his right leg. On examination his power was found to be perfect and all his reflexes normal, but testing his sensibility I found complete loss to heat, cold, and pain on the right side of the body and the right leg from the level of the seventh costal cartilage downwards. That was his only defect, and could easily be explained by a minute focus of hæmorrhage or softening in the upper part of the dorsal cord on the left side. This was an example of the effects of true spinal concussion manifested by a slight but perfectly recognisable and localisable lesion. The importance of discriminating between these two types of spinal concussion is as important in civil as in military work, and especially in dealing with legal claims made in relation to accidental injuries.

Traumatic Epilepsy.

You will, I hope, excuse me if I now leave the subject of shell shock and turn somewhat abruptly to that of traumatic epilepsy as another common result of warfare on the brain. This step is taken because the question of how we are going to deal with a large number of cases of epilepsy arising out of injuries sustained in this war is already, and is going to be still more, one of very great importance to all of us. It is a common experience in my practice to have cases suffering from traumatic epilepsy referred to me for advice as to treatment, and not infrequently it is assumed that the treatment must be surgical. It is not my intention to suggest that surgery has no part in the treatment of traumatic epilepsy, but our time will not, I think, be wasted if we consider carefully what are the principles which ought to guide us in the medical and surgical treatment of these patients. One of the most difficult subjects in medical science is the pathogenesis of epilepsy; but before dealing with remedial measures it will be well to recall what we know about the incidence of the disease in relation to head injuries, and to inquire how far this knowledge helps us in understanding the pathology and treatment of the condition.

In the first place, one is struck by the fact that only a certain proportion of persons suffering from head injuries develop fits.

In the second place, we are faced with the discovery that the locality of the injury has no apparent influence in the production, although, of course, it may modify the features, of the epileptic attack.

Thirdly, and this is a matter which we must never forget, the severity of the injury has, as far as we can judge, no bearing on the question as to whether epilepsy is or is not likely to supervene. We have all seen, or will see, instances of this disorder following trivial blows on the head in connexion with which no injury to bone, membrane, or brain can be demonstrated. We find it following simple or depressed fractures of the skull, and we find it perhaps equally frequent as a sequel to severe lesions involving the membranes and the brain itself. But we must not forget that there are numerous patients, all of whom have been subject to one or other of these grades of trauma, who go on living without developing any epileptic tendencies. The only conclusion which I have been able to draw from these facts is that we are all potentially epileptic, and that we only differ one from another in the ease or difficulty with which this latent process can be excited into activity. One of the results which may be arrived at from the experiences of this war may be looked for in the shape of some statistics showing how far neuropathic or psychopathic tendencies of hereditary origin predispose a soldier to epilepsy after receiving a head injury. At the present time I am ignorant of any reliable data on which to form an opinion in regard to this question. As far as my own experience is concerned, it is impossible to prophesy whether this or that patient suffering from a head injury is likely to develop fits, and it is my practice, as I shall show presently, to assume that this

is a possibility which we cannot put out of court in any particular instance.

What is the right course to pursue in the case of any patient suffering from traumatic epilepsy brought for advice as to treatment? We shall all agree that, in the first place, it is desirable to investigate the condition of the patient's head resulting from the trauma he has sustained, and we shall employ not only our clinical methods of investigation, but the help of X rays in order to attain this result. In one case we shall find no evidence of injury, although there may be a history of a blow, and we shall be confronted with the question as to whether we are to remain satisfied with the evidence of an X ray examination as to the absence of any depressed fracture. We may feel that a depressed fracture is a condition which should be dealt with surgically and that it is impossible to be sure of its presence or absence without an exploratory operation. This may be a justifiable proceeding in any case where the site of the injury is clearly determined.

In another case we find that an operation soon after the infliction of the wound has been performed for the purpose either of exploration for foreign bodies or for sepsis and drainage, that the scar has healed and is healthy, and that there is no evidence of increased intracranial pressure. X ray examination reveals the presence of no foreign body and of no fragments of bone, either deep or superficial, and we conclude that a scar is formed in which perhaps the surface of the brain, the dura mater, and the scalp are all more or less involved. I hold that in such a case no operation is justifiable, that any attempt at surgical interference of any exploratory character can only lead eventually to further scar tissue, and more likely than not to further injury of the brain.

In a third case our examination shows a similar healthy condition of the scar, but the presence of a superficial foreign body or superficial fragments of bone embedded in the damaged surface of the brain or in the tissue overlying it. In this instance we may take the view that such foreign bodies by their weight and mobility, in relation to the pulsation of the brain, may exercise some irritating influence upon that organ, and we may justify a desire to round up these alien enemies by the conviction that the operation can do no further damage to the brain.

Finally, we are confronted with the problem presented by a case in which, again, the wounded parts are healed, there is an opening in the skull, and the X rays reveal the presence of bone or metal embedded in the brain at some distance from the surface. These are the cases which present the greatest difficulty, because we know that any attempt to remove the offending matter is sure to be accompanied by destruction of important nervous tissue, and we are aware, or ought to be aware, that this removal provides no guarantee whatever that the patient's fits will cease to occur. It is imperative at this stage to remember that fits originate in damaged brain and not in bone or metal. I believe that we should be guided in such a case by other considerations than those which bear upon the question of epilepsy. For instance, some pieces of metal by their size and weight appear to give rise to a form of aseptic encephalitis the symptoms of which resemble those of a cerebral abscess in the shape of headache, vomiting, optic neuritis, and focal signs. It is interesting to note at this point that such symptoms of cerebral irritation may not be developed so long as the patient is leading a quiet, restful existence in hospital, but tend to supervene when he returns home and attempts to carry on anything like a normal existence. If this is the case, I have no hesitation in saying that the piece of metal must be removed if accessible to the surgeon.

Supposing, on the other hand, that the foreign body or bodies are small and not giving rise to such symptoms as I have mentioned, it is, I believe, an unwise procedure to resort to further interference. Time alone will show what is to be the ultimate fate of many men who are returning to civil life with these small and sometimes numerous relics of their warlike days lying in the brain.

So far I have had the presumption to deal with what may be called the surgical aspect of these cases, and I must now state as emphatically as possible that, whether any surgical procedure has been carried out or not, the treatment of the epilepsy has not yet begun. The treatment of the epilepsy is, and can only be, medical and chiefly medicinal. It will depend upon the proper administration of bromides and other drugs and the proper guidance of the patient in the kind of life which he proposes to pursue. I maintain that the principle guiding surgical procedures in any case is simply this: we must satisfy ourselves that the conditions at the site of injury have been made as healthy and as near the normal as surgery can make them. It is most important that in dealing with any particular patient and before undertaking any operation in connexion with traumatic epilepsy this principle should be explained to the patient and his relatives. They should clearly understand that the operation is not undertaken for the purpose of curing his malady, but for the purpose of making the outlook for the success of his medicinal treatment as hopeful as we, in the present state of our knowledge, can expect.

The conclusions I have outlined are those based not merely on the short experience of this war, but on a long experience of traumatic epilepsy and the results of operation in civil life, and you will not be surprised that my conclusions are what they are when I tell you that I have never seen a case of traumatic epilepsy cured by operation alone.

Anyone who has experience of epilepsy is aware that any drastic treatment may for a time show apparently good results, and that these temporary improvements have often been mistaken for cures. The places to look for cases illustrating the surgical cure of epilepsy are the institutions and colonies provided for the incurable and chronic examples of that disease. On the other hand, there is every reason to believe that if the assistance of surgery is used in the way I have indicated and if the medicinal treatment of the disease is carried out sufficiently early, with perseverance, regularity, and skill, the prospect of nipping these cases of epilepsy in the bud is full of hope. The important thing is to bring the effect of bromide to bear as soon as possible in order to prevent the brain acquiring the "habit of fits."

So firm is my belief in prophylaxis and early treatment that I make a rule of giving bromide to every case of head injury which comes into my ward, and if I had my way I would give every case of the kind some bromide for at least six months after the date of his injury. The determination of time in regard to treatment is always a difficult matter, and any attempt to lay down fixed periods has generally led to disastrous results. It is quite possible that the six months I have mentioned would be better extended to at least a year or even longer.

So much for the treatment of the individual. A much larger question should be occupying the minds of those in authority—the question of how to deal with the large number of epileptics who will be left unemployed and unprovided for at the end of the war.

There is a consensus of opinion that one of the most important elements in the treatment of epilepsy, whether traumatic or idiopathic in character, is regular employment for mind and body. So far this country has not dealt with the epileptic problem in a satisfactory way, and it is to be hoped that the Government will make a big effort to improve the lot of these unfortunate members of society by some development of the colony system under medical control. This is one of the directions in which a Minister of Health could find plenty of scope for his energies.

Wimpole-street, W.

METROPOLITAN HOSPITAL SUNDAY FUND.—At the annual meeting of this Fund, held at the Mansion House on Dec. 21st, under the presidency of the Lord Mayor, it was stated that the annual collection amounted to £70,700, of which sum £35,121 were received from places of worship. Hospital Sunday was fixed for the fourth Sunday in June for the future.

THE TRAINING OF HEALTH VISITORS.—At the present moment there is a great demand for health visitors in connexion with the establishment of infant-welfare centres under the new Local Government Board scheme. Heretofore the facilities for the training of such visitors have lacked the important essential of affording practical experience in the management of babies. The new school of mothercraft which is to be opened in February next at 29–31, Trebovir-road, S.W., by Miss E. Wheatley and Miss W. Wrench, should afford excellent opportunities for teaching this subject in a practical way, for resident babies will serve as the didactic material on which the students can learn. The course is to consist of nine months' training, and experience will be gained in breast-feeding as well as in most of the recognised methods of artificial feeding.

PLANT HAIRS AS PSEUDO-PARASITES.

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IT is perhaps no exaggeration to say that until the present war, routine microscopical examination of the fæces has never been so extensively carried out. In the course of this search it is not uncommon to find bodies which at first sight suggest some form of animal parasite. Closer examination, however, proves as a rule that the supposed parasite is merely some form of plant anatomy, generally of the nature of plant hairs. Ignorance of the general appearance of such hairs, coupled with a hasty examination, might conceivably lead one into error. A case in point may be mentioned.

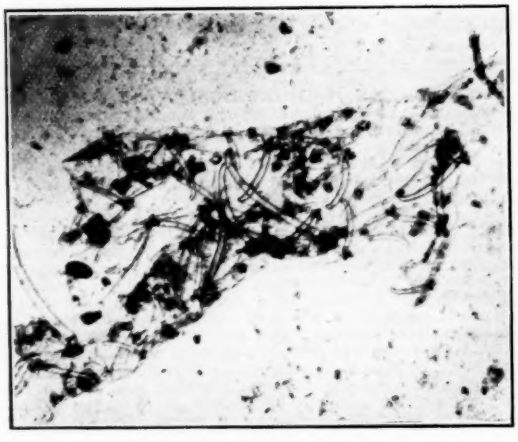
FIG. 2.

Microphotograph of stinging hair of nettle. × 60. Note bulbous base and bent-over apex.

A patient was admitted to hospital on account of diarrhœa which had been unsuccessfully treated outside. He gave a history of having lived until recently on the borders of Chili and Argentina. The clinician who first saw the case considered the possibility of a parasitic cause and treated the case accordingly. An examination of the stools thereafter revealed the presence of large numbers of bodies which at the first glance resembled ankylostoma, and in addition small bladder-like structures. The former had a hooked pointed tip, while the other end, which was somewhat expanded, showed the presence of small spines. The whole appearance suggested the male form of ankylostoma. The size, however, was entirely against its being such, the largest being roughly 300μ. Moreover, no oral aperture and no evidence of any internal organs could ever be detected and no ova could be found. The patient's blood, while showing a slight degree of anæmia, gave no evidence of eosinophilia. A consideration of the above facts pointed to the bodies being plant hairs, and after further investigation we identified them as the grapnel hairs of the common runner-bean.

As the characters of the hairs found on the common edible plants are probably little known to bacteriologists, and as it is difficult to find drawings of them even when botanical literature is accessible, we considered that a series of illustrations of such hairs might be of some little value as a reference. Further, plant hairs have acquired some degree of importance, inasmuch as they may form the starting point of appendicular concretions, as has recently been emphasised by Professor S. G. Shattock.[1] As plant hairs are composed of cutin they are extremely resistant to the action of the digestive juices, and some of them, notably those of the runner-bean above described, may

FIG. 3.



Microphotograph of portion of membrane from scarlet runner with attached hairs. × 60.

FIG. 1.

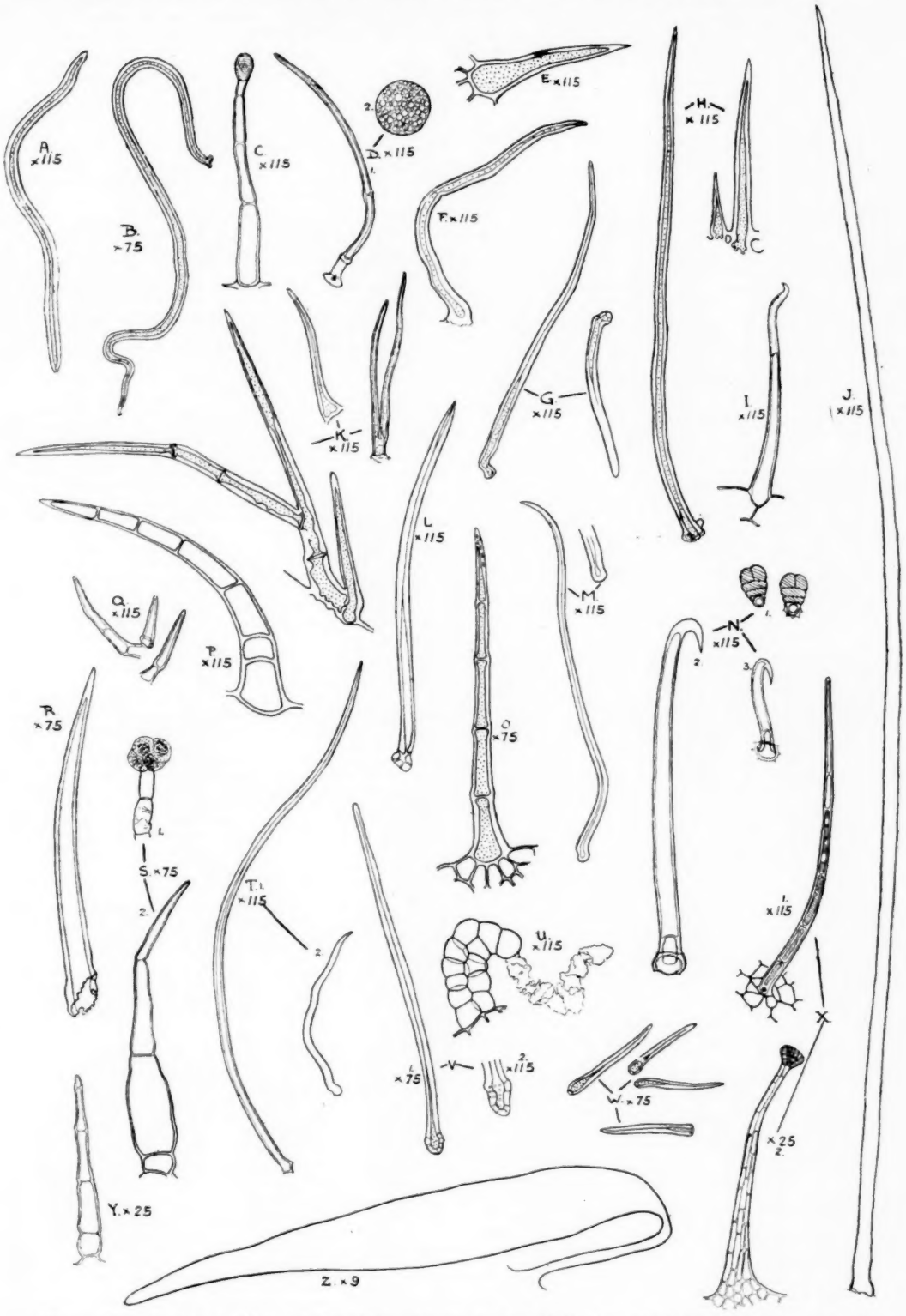
Microphotograph of a short grapnel hair of the scarlet runner. × 260.

[1] Proc. Roy. Soc. Med., vol. ix., No. 9, July, 1916, p. 70.

DESCRIPTIONS OF DRAWINGS ON PLATE.

A. Hair from skin of peach.
B. Hair from skin of apple.
C. Glandular hair from tobacco-leaf. The gland is terminal and is shaded in. Frequently it is missing and sometimes it may consist of several cells.
D. 1. Hair from leaf of sage. 2. Oil gland with granular contents from same source. Exactly similar glands are found in the leaves of thyme and marjoram. They suggest ova in appearance and by their yellowish colouration.
E. Hair from the interior of the fig.
F. Hair from skin of pear, close to the remains of the flower.
G. Thick-walled hairs from tea-leaf.
H. Two varieties of hair from oat grains. Taken from near the apex. The hairs attached at a lower level have the basal part set at an angle, somewhat like the hairs found on tea-leaves. By this device they are enabled to lie parallel with the long axis of the grain.
I. Hair from mulberry fruit. When older these are filled with deep yellowish colouring matter.
J. Long silky hair from inner skin of chestnut. These hairs possess very thin walls.
K. Three types of hair from barley grains. The branching is characteristic of these hairs alone among food plants.
L. Hair from strawberry fruit.
M. Hair from blackberry fruit. The small figure shows the basal portion of a larger specimen.
N. 1. Gland hairs from surface of young scarlet-runner. 2 and 3. Large and small hooked hairs from the epidermis of the same vegetable.
O. Hair from leaf of marjoram (culinary herb). The walls of these hairs are covered with minute rugosities, a feature shared also by sage, mint, and thyme.
P. Hair from leaf of mint.
Q. Hairs from leaf of thyme.
R. Hair from rice grain.
S. 1. Glandular hair from skin of tomato. The glandular portion is shaded. 2. Long hair from skin of tomato suggestive of an insect appendage.
T. 1. Thick-walled hair from fruit of raspberry. 2. Small thin-walled hair of ditto. These hairs are often much twisted.
U. Multicellular hair from leaf of dandelion. A peculiar feature of these hairs is that the distal portion is almost always withered in the way shown in the figure.
V. 1. Hair from wheat grain. Note the blunt apex and the perforations at the base. 2. Base of ditto.
W. Several hairs from rye grains.
X. 1. Small hair from fruit of gooseberry. These have a very rough surface and their cells contain highly refractile masses as a rule. 2. Large glandular hair of gooseberry. These are usually visible to the naked eye and the glandular tip bears a superficial resemblance to the head of a tapeworm.
Y. Large hair from epidermis of vegetable marrow. These hairs are also visible to the naked eye.
Z. One of the large fleshy hairs which form the pulp of the orange. These are more elaborate structures, possessing an epidermis of their own surrounding a mass of very thin-walled cells. They have also a distinct stalk. The drawing merely shows the outline.

ILLUSTRATIONS REPRODUCED FROM DRAWINGS OF HAIRS FOUND ON EDIBLE PLANTS.



Note.—Where the hair is thick-walled the internal cavity has been dotted in. The hairs figured are more or less average specimens.

exercise a distinctly irritant effect on the mucous membrane of the alimentary canal.

In the identification of any hair the points to which attention should specially be directed are three: (1) The number of cells of which it is composed; (2) the thickness of the wall; and (3) the characters of the base or point of attachment. The length of plant hairs varies considerably, sometimes by as much as 100 per cent., and they are frequently remarkably twisted. The walls of some are characterised by the presence of certain markings—e.g., those found on the culinary herbs, which are warted, and those of the nettle, which show spiral striation.

Certain plants do not possess hairs on the edible parts, and these are merely enumerated here:—Fruits: Pineapples, bananas, currants, and nuts (excepting chestnuts). Vegetables: Roots in general, lettuce, spinach, rhubarb, leeks, and asparagus. Herbs: Parsley and fennel. Cereals: Maize only.

Examples of the hairs found on the other edible plants in common use are appended in the illustrations, which have been made from actual specimens, either by microphotography or with the help of the camera lucida. To those, of course, who are familiar with the appearance of the various kinds of animal parasite met with in the fæces there is no likelihood of plant hairs being mistaken for parasites. The illustrations are intended rather for those who have had no opportunity to become familiar with the appearance of the more uncommon animal parasites met with in the fæces.

Reading.

NOTES ON AN OUTBREAK OF CEREBRO-SPINAL MENINGITIS

AT H.M. TRAINING ESTABLISHMENT, SHOTLEY, AND THE METHOD OF TREATMENT ADOPTED—JULY 14TH TO AUGUST 14TH, 1916.

BY THOS. D. HALAHAN, F.R.C.S. EDIN.,
FLEET-SURGEON, R.N.

THIS outbreak of 19 cases occurred between July 14th and August 14th this year. It is somewhat remarkable because it occurred in the months when cerebro-spinal meningitis cases usually decline and because it came on after a series of 9 isolated cases occurring at Shotley between November, 1915, and July, 1916. Of the 19 cases, 6 yielded proved cultures of the meningococcus from the cerebro-spinal fluid; 1 of the others gave a positive throat swab. It is hard to escape the conclusion that the 13 cases in which the cerebro-spinal fluid did not yield the meningococcus should nevertheless be considered cases of cerebro-spinal meningitis for the following reasons.

1. They are clinically indistinguishable from cerebro-spinal meningitis. I am not depending only on my own judgment for this statement, nor on that of Surgeon E. J. Tongue, who has attended all these cases with the greatest skill and pains. It is also the opinion of Captain Sheffield Neave, R.A.M.C., who saw all the cases (and who has a very large experience of cerebro-spinal meningitis both clinically and bacteriologically), and of Major A. M. N. Pringle, who saw the last 8, among which were the mildest of the cases. Major Pringle has been for many years medical officer of health for Ipswich.

2. They occurred with other proved cases of cerebro-spinal meningitis.

3. Such cases in which the meningococcus is not recoverable have been frequently noted by many writers as occurring during outbreaks—Sophian, M. Foster, Lundie, Thomas and Fleming, and Netter and Debré, &c. Sophian, however, considers that the meningococcus should be recognisable in about 85 per cent. of the cases in certain outbreaks. It has also been stated that many mild cases have been overlooked and called influenza.

4. Even in the 2 fatal cases the meningococcus was not recovered during life, though repeated lumbar punctures were done. It is not surprising, therefore, that it was not recovered from the others.

5. Stiffness of the back and neck were present in all cases, as also were Kernig's sign and headache. Lumbar puncture showed increased pressure in all cases but 1, and a greatly increased quantity of fluid in all but 3, the average quantity being 63 c.c. instead of the normal 10 c.c. Vomiting was present in 9 cases out of the 13. Many other symptoms of meningitis were present in individual cases.

A short summary of each of the 19 cases is given; the 6 proved bacteriologically are Cases 2, 4, 7, 9, 15, and 17.

CASE 1.—Boy, 16, Dormitory 36; joined barracks Oct. 24th, 1915. Admitted July 14th. Temperature 103° F.; nausea, headache. 15th: Stiffness of neck and back, Kernig's sign, severe headache, photophobia, twitching of muscles, drowsy. Lumbar puncture—increased pressure, 50 c.c. withdrawn. 16th: Condition the same. Lumbar puncture—increased pressure, 70 c.c. Patient improved rapidly, but complained of weakness of right leg on August 1st. August 23rd: One month's leave; went to light duty on return. Still has weakness of right leg.

CASE 2. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 7; joined barracks July 12th, 1916. Admitted July 19th. Temperature 102·4° F.; malaise, papular rash on chest and arms. 20th: Headache, pain in neck; temperature 103°. 21st: Same; Kernig's sign. Lumbar puncture—increased pressure, 50 c.c., clear. 22nd: Same; vomited twice. Lumbar puncture—increased pressure, 75 c.c., very turbid. 23rd: Headache severe, retraction of head and neck, frequent vomiting, delirious. Lumbar puncture—increased pressure, 70 c.c., turbid. 24th: Same. Lumbar puncture—40 c.c., turbid. This patient afterwards improved rapidly, and went on a month's leave on Sept. 18th.

CASE 3.—Boy, 15, Dormitory 7; joined barracks July 9th, 1916. Admitted July 20th. Temperature 103° F.; malaise, pains in neck. 21st: Temperature 102°; drowsy, Kernig's sign, stiffness of neck and back. Lumbar puncture—increased pressure, 70 c.c., clear; lymphocytes in excess. 22nd: Same; herpes. 23rd: Headache severe, vomiting, photophobia, retraction of head and neck. Lumbar puncture—increased pressure, 60 c.c., turbid. After this the patient improved, and was discharged to a month's leave on August 27th.

CASE 4. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 7; joined barracks July 6th, 1916. Admitted July 21st with headache, malaise, stiffness of neck, Kernig's sign. Lumbar puncture—increased pressure, 70 c.c., clear. 22nd: Drowsy, vomiting, severe headache, rigor; temperature 102° F. Lumbar puncture—increased pressure, 60 c.c., very turbid. 24th: Marked retraction. Lumbar puncture—35 c.c., turbid; meningococcus found. After this the patient improved and went on a month's leave on Sept. 4th.

CASE 5.—Boy, 15, Dormitory 7; joined barracks July 5th, 1916. Admitted July 21st. Temperature 103·8° F.; headache, pain in neck, Kernig's sign. Lumbar puncture—increased pressure, 80 c.c., clear; polymorphs in excess. 22nd: Temperature 103°; very drowsy, headache, retraction of neck, no vomiting. Lumbar puncture—increased pressure, 75 c.c., cloudy. 23rd: Very much better. The patient rapidly improved up to August 8th, when he had recurrence; headache, pain in neck, dazed, knee-jerks exaggerated, Kernig's sign, signe de la nique, Brudzinski's sign. Lumbar puncture—increased pressure, 65 c.c., clear. August 9th: Vomiting, headache, herpes, stiffness of neck. The patient improved again steadily, and was sent on a month's leave on Sept. 4th.

CASE 6.—Boy, 17, Dormitory 41; joined barracks Nov. 10th, 1915. Admitted July 22nd with vomiting, headache, and nausea. Temperature 100° F. 23rd: Kernig's sign, pain and stiffness of neck and back. Lumbar puncture—increased pressure, 65 c.c., clear; polymorphs in excess. 24th: Improving; headache, pain in neck and back up to August 11th, Kernig's sign still present, and headache frequent. The patient was sent on a month's leave on Sept. 3rd.

CASE 7. *Meningococcus found in cerebro-spinal fluid.*—Boy, 15, Dormitory 12; joined barracks July 6th, 1916. Admitted July 22nd in a dazed condition, unable to speak or hear, pain in neck, Kernig's sign. 23rd: Condition same; temperature 100·6° F. Lumbar puncture—increased pressure, 70 c.c., clear. 24th: Temperature 103°; still unable to speak, vomiting, hæmaturia, severe headache, pain in back of neck. Lumbar puncture—increased pressure, 65 c.c., turbid. After this the patient rapidly improved, and was sent on a month's leave on Sept. 3rd.

CASE 8.—Boy, 17, Dormitory 6; joined barracks May 19th, 1916. Admitted July 22nd with sore-throat, headache, and nausea. Temperature 103° F.; vomiting, some rash on chest, drowsy, stiffness of back, Kernig's sign. Lumbar puncture—increased pressure, 70 c.c., clear; cells in excess, polymorphs and lymphocytes equal. 23rd: Vomiting, headache, pains in neck and back, retention of urine. 24th: Marked improvement; retention of urine continues. After this the patient gradually improved, and was sent on leave on August 19th.

CASE 9. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, Dormitory 29; joined barracks July 21st, 1916. Admitted July 24th with headache, stiffness of back, and Kernig's sign. Lumbar puncture—increased pressure, 55 c.c., clear. 25th: Frequent vomiting, headache severe, retraction of neck, drowsiness. Lumbar puncture—increased pressure, 50 c.c., turbid. After this the patient steadily improved; he had a papular rash, however, from August 6th to 8th. Sent on a month's leave on Sept. 4th.

CASE 10.—Boy, 15, Dormitory 28; joined barracks June 9th, 1916. Admitted July 24th with erythematous rash on trunk and limbs. Temperature 99·8° F.; stiffness of neck and back, Kernig's sign. Lumbar puncture—increased pressure, 75 c.c., clear; lymphocytes in excess. 25th: Headache, vomiting, pains in neck and back. 26th: Same. The patient improved rapidly, and was sent on a month's leave on August 24th.

CASE 11.—Boy, 16, Dormitory 20; joined barracks June 9th, 1916. Admitted July 27th with headache, pains in neck, and Kernig's sign. Lumbar puncture—increased pressure, 50 c.c., clear. 28th: Headache, vomiting, pain in back of neck. This was a mild case and the patient improved rapidly. He was sent on a month's leave on August 27th.

CASE 12.—Boy, 16, Dormitory 28; joined barracks June 9th, 1916. Admitted July 27th with pains in legs, stiffness of neck and back, and Kernig's sign. 28th: Stiffness and pain in back continued, reflexes exaggerated. This was a very mild case. Lumbar puncture—pressure normal, clear. The meningococcus was recovered from a throat swab.

CASE 13.—Boy, 15, Dormitory 13; joined barracks May 10th, 1916. Admitted July 27th with headache, a temperature of 100° F., stiffness of neck and back, and Kernig's sign. 28th: Condition same. Lumbar puncture on 29th; pressure normal, clear. 30th: Vomited several times. This was another very mild case. Duty on August 29th.

CASE 14.—Boy, 17, Dormitory 28; joined barracks June 23rd, 1916. Admitted July 28th with stiffness of neck and back and Kernig's sign. Lumbar puncture on 29th showed increased pressure, fluid flocculent. The patient improved rapidly, and was sent to duty on August 30th.

CASE 15. *Meningococcus found in cerebro-spinal fluid.*—Boy, 16, *Ganges* ship. Admitted July 29th with mild sore-throat; symptoms of cerebro-spinal meningitis only appeared on August 2nd; pain in back of neck, Kernig's sign, nausea, and vomiting. Lumbar puncture—increased pressure, 75 c.c., slightly turbid. August 3rd: Frequent vomiting, severe headache, pains in back of neck; temperature 101·8°.F. 4th: Very restless, severe headache and backache, retention of urine, retraction of head. Lumbar puncture—increased pressure, 90 c.c., yellow. The patient died next day. Meningococcus grown from post-mortem specimen of cerebro-spinal fluid, but not in life.

CASE 16.—Boy, 16, Dormitory 14; joined barracks July 6th, 1916. Admitted August 4th with temperature of 102·4° F., headache, stiffness of neck and back, marked Kernig's sign, nausea. Lumbar puncture—pressure normal, 35 c.c., clear. 5th: Severe backache, headache, vomiting. 9th: Very much better. The patient improved regularly, and was sent on a month's leave on Sept. 4th.

CASE 17. *Meningococcus found in cerebro-spinal fluid post mortem.*—Boy, 16, Dormitory 31; joined barracks March 14th, 1916. Admitted June 22nd with malaise and a temperature of 101·2° F. No definite signs of disease could be recognised. The temperature ran an irregular course and at times the patient's stool suggested typhoid. Blood negative to Widal's reaction. Cerebro-spinal meningitis symptoms first appeared on August 9th—pain and stiffness of neck and back, tremulous tongue, severe headache, Kernig's sign, vomiting. Lumbar puncture—increased pressure, 65 c.c., clear. 11th: Kernig's sign, Brudzinski's sign, Macewen's sign, signe de la nique, and Babinski's sign all present. Lumbar puncture—increased pressure, 47 c.c., straw-coloured. 13th: Much pain, headache, backache; temperature 101°. Lumbar puncture—increased pressure, 50 c.c., opalescent. 15th: Retention of urine in addition to other symptoms. Died on the 21st. The meningococcus was recovered from a post-mortem specimen, but not in life.

CASE 18.—Boy, 16, Dormitory 21; joined barracks May 12th, 1916. Admitted August 13th with a temperature of 102·8° F., back and neck very stiff and painful, knee-jerk absent, slight papular rash on trunk, Kernig's sign, Brudzinski's sign, Macewen's sign, and signe de la nique all present. Lumbar puncture—increased pressure, 65 c.c., clear. 14th: Condition same; vomited several times. Special signs present as before. 15th: Much improved. 24th: Patient vomited; also a red papular rash on limbs. Further vomiting on August 31st and Sept. 1st. On Sept. 10th the patient went on a month's leave.

CASE 19.—Boy, 17, Dormitory 41; joined barracks August 11th, 1916. Admitted August 14th (three days after joining from *Powerful*) with a temperature of 104° F., sore-throat, and headache. 15th: Intense pain at back of neck and in back, severe headache, knee reflex absent, Kernig's sign. Lumbar puncture—increased pressure, 56 c.c., clear. 16th: Great improvement, which continued next day. After this the patient made an excellent recovery. He was sent on a month's leave on Sept. 9th.

All these cases were treated by the advice of Captain Sheffield Neave on similar lines: early puncture, free washing out of the spinal canal with ½ per cent. solution of carbolic in normal saline, and then injection of Pasteur serum, prepared from Gordon's strains, into the canal.

I wish to draw attention to the admirable results obtained in these 19 cases by the above method, though, of course, one cannot generalise from so small a number. Out of 19 cases only 2 were fatal.

Each lumbar puncture shown in the summary of cases was followed by the washing out and injection. The last 2 cases were injected with Lister Institute serum prepared from Gordon's strains; the dose of this is 30 c.c., as against 10 c.c. in the other.

As to the origin of the outbreak it seems scarcely necessary to look beyond Shotley. The dormitories affected were 11 in number, mostly widely apart; there are 36 dormitories in Shotley. One case came from *Ganges* ship.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

SECTION OF ELECTRO-THERAPEUTICS.

Pharyngeal Pouches.

AN ordinary meeting of this section was held on Dec. 15th, Dr. G. HARRISON ORTON, the President, being in the chair.

Captain N. S. FINZI read a paper, supplemented by a series of skiagrams, on "Pharyngeal Pouches." He first discussed the situation and origins of such pouches. Usually, by the time the radiographer saw a pharyngeal pouch it had reached an advanced stage, sometimes so advanced that it obstructed the œsophagus by pressing upon the contents. His present purpose was to treat of the subject of diagnosis from the X ray appearances. He found that the best substance to give the patient to eat with the object of facilitating the radiographic representation was a semi-solid paste of bismuth oxy-chloride. The consistency should be such that it did not flow back immediately to its natural level. Such a paste was found to adhere to the pharynx for an appreciable time. He regarded as very important the examination of cases of suspected pouch by the fluorescent screen; otherwise much difficulty was experienced in differentiating them from malignant strictures. The diagnostic feature to watch for was the way in which the bismuth that had been given left the pouch. If the condition were a pharyngeal pouch, the bismuth could be seen leaving the mouth of the pouch, and passing thence straight into the œsophagus. Sometimes it was exuded in that way by the contraction of the muscles of the throat. In the conditions with which such pouches were liable to be confused—i.e., carcinomatous or fibrous strictures—the bismuth was arrested, and later it could be seen leaving the centre or the lower end of the dilated œsophagus. He showed a number of skiagrams to illustrate the points. Sometimes a pouch became inflamed, and an indentation formed at the lower end in consequence of adhesions having occurred. One case in which the diagnosis was very obscure was that of a very old and weak patient in whom some of the bismuth given passed into the trachea and into one bronchus. It was natural to suppose there was a growth, which was causing complete obstruction, and that some part of the bismuth was escaping through a sinus into the trachea. It proved, however, to be a pouch. He found that a true lateral view gave a far better idea of the condition in these pouch cases than did any other. In the case of a very large pouch it was well to place the X ray tube some distance off, so as to have parallel rays impinging, and to correct distortion. If the pouch were somewhat low, and the patient was a tractable one, he should be bidden to commence to swallow and try to retain the larynx in that higher

position for a brief space. One patient with a large pouch had been operated upon three years previously by gastrostomy because he was supposed to have carcinoma. Had he been examined with the œsophagoscope the mistake could scarcely have been made. When the pouch had been discovered it was removed. After viewing these cases with the screen his practice was to take a plate also, as the details in the latter assisted in the diagnosis. His patients were always examined in the standing posture. He did not think spasmodic stricture came into the diagnostic problem, because it was unlikely to occur in this situation. Fortunately, a fibrous stricture was rare in this region, as its diagnosis from a pouch might be very difficult. Pharyngeal pouches were supposed to be very rare, but the eight cases, pictures of which he had shown, occurred in his private practice in the course of five and a half years. Usually the presence of these pouches was not suspected until they became large enough to cause symptoms.

Dr. DUNDAS GRANT, Dr. STANLEY MELVILLE, Dr. W. H. KELSON, and Dr. IRWIN MOORE discussed the paper, and Captain FINZI replied.

Dr. R W. A. SALMOND gave a skiagraphic demonstration of the changes observed in osteomyelitis of different origins, basing his contribution upon three essentially different cases of osteomyelitis in the long bones The X ray pictures were taken at intervals over a course of years, and afforded an instructive demonstration of the bone destruction and the subsequent laying down of new bony tissue.

HUNTERIAN SOCIETY.—A meeting of this society was held on Dec. 13th, Dr. Andrew S. Currie, the President, being in the chair.—Dr. Hingston Fox read a paper on the Use of Antimony in Ancient and Modern Medicine. After a brief allusion to Hebrew and Greek records, Dr. Fox said that the drug was long applied as an astringent and caustic. Its internal use seems to date from the end of the sixteenth century, when the famous "Currus Triumphalis Antimonii" extolled it as a remedy for all the ills of the body. The drug was as vehemently denounced by the Galenists, but during the next two centuries it was in large employ. Fothergill combined antimony with aloes in his once well-known pill. In Plummer's pill it was mixed with calomel and guaiacum. By Cullen's time antimony was known as an "alterative." Soon after this the French school introduced the remedy in the treatment of inflammations, especially in pneumonia. It displaced blood-letting and gave much better results. Trousseau was its latest exponent, but T. K. Chalmers and others showed that pneumonia recovered more readily without antimony, and so this drug was gradually disused and has fallen into neglect. Lately its chemical affinity to arsenic has led to the use of antimony in trypanosomiasis, kala-azar, syphilis, and yaws with good results. A case of the first-named disease was related. It was suggested that the alterative properties, on which the old physicians laid stress, were in reality based upon a control of chronic affections.—Amongst those who discussed the paper were Dr. C. Couper Cripps, who pointed out that many years ago he was led to use antimony wine with an alkali in cases of lichen planus.—Dr. F. Parkes Weber dwelt upon the value of an emetic in respiratory diseases, when given at the commencement of treatment, which clears the bronchi of accumulated mucus.—Dr. Thomas Dutton said that he had used antimony in pneumonia for a generation, and had so much confidence in it that he seldom required other drugs. It was a great pity, he thought, that antimony was not more used in general medicine. Its value in pneumonia and chronic bronchitis was also upheld by the President.

LEEDS AND WEST RIDING MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on Dec. 8th at Leeds General Infirmary, Dr T. Churton being in the chair.—A communication on Cerebro-spinal Meningitis was made by Major C. W. Vining In discussing the symptoms of the disease, cases were cited illustrating the remarkable variation in the intensity of the infection, and emphasis was laid upon the possibility of cases being missed unless the fact that the disease could occur in a mild form was kept in mind. The onset in Major Vining's cases was consistently sudden, although in about half of them it was preceded by indefinite symptoms, such as catarrh of the respiratory passages, intermittent headache, or sensation of chilliness. The symptoms of the developed condition were fairly consistent practically all experiencing acute headache and changed mentality; while vomiting at the onset was common. A purpuric rash was the exception rather than the rule, and when it had occurred it appeared early and in the more malignant type of case. In discussing the treatment of the cases, the importance of frequent lumbar punctures and the administration of antimeningococcal serum was insisted upon. Referring to the bacteriological side of the subject, it was pointed out that quite a number of undoubted cases failed to show the meningococcus in smear preparations of the cerebro-spinal fluid, and even on cultivation growth was sometimes not obtained. If, however, the fluid was first incubated by itself or in conjunction with serum broth, a growth was nearly always obtained on plating the incubated material. The importance of the examination of contacts and the isolation of the carrier was discussed, and in connexion with this it was pointed out that quite a number of people amongst the general population harboured a Gram-negative diplococcus in the naso-pharynx which was indistinguishable by all the present known tests from the meningococcus. Present evidence seemed to show that cases of the disease, at any rate in its endemic form, developed amongst the carrier population, and Major Vining brought forward information to show that meteorological conditions appeared to be related to the occurrence of cases. He showed that a high rainfall consistently preceded cases, and was usually accompanied by a low rapidly fluctuating barometer, a series of high relative humidities, and low temperature. Before the paper Major Vining demonstrated the agglutination test, and showed a series of plate cultures from cases and from positive contacts.—A number of cases and specimens were also shown.

HARVEIAN SOCIETY OF LONDON.—A meeting of this society was held at the Stafford Rooms, Tichborne-street, W., on Dec. 7th, Dr. Edmund Cautley, the President, being in the chair.—Dr. B. H. Spilsbury read a communication entitled "Sudden Death," defining the scope of the paper as the consideration of those forms of death which occur in apparently normal persons or in those not thought to be seriously ill, thus necessitating coroners' inquiries. Selecting especially the more difficult and obscure cases of sudden death, he gave examples due to diseases of the circulatory, respiratory, and nervous systems. He then illustrated deaths from shock by several examples, and finally analysed deaths from anæsthetics according to (1) the anæsthetic and (2) the morbid process, the latter group being subdivided according to the presence or absence of status lymphaticus.

LIVERPOOL MEDICAL INSTITUTION.—A meeting of this society was held on Dec. 14th, Major C. J. Macalister being in the chair.—Major J. M. Beattie read a note on Hypochlorous Acid as a Disinfectant for the Throat, &c. The solution may be prepared by the electrolysis of a 3 per cent. saline solution—a current of 1 ampère running for an hour and a half between carbon poles immersed in the liquid producing a suitable strength. He exhibited a simple electrical apparatus by which the solution could be kept in motion during the process of electrolysis. He showed by an analysis of the cases treated by this disinfectant, which should in all cases be freshly prepared, that the throat in cases of diphtheria was free from infection seven to ten days earlier than when the ordinary disinfectants were used. The solution may be used with a spray or applied to the throat with a swab —Mr. T. C. Litler Jones contributed an interesting note on Gas Gangrene, illustrated by colour photographs and sketches, and related his experiences of the treatment of the disease in those under his care in the Liverpool Merchants' Hospital in France, to which he had recently been attached. He exhibited several radiographs which showed clearly the collections of gas in and round the muscles. In discussing the treatment of the condition he emphasised the importance of prompt and drastic surgical interference by incision and in many cases by amputation.

LONDON DERMATOLOGICAL SOCIETY.—A meeting of the above society was held at St. John's Hospital for Diseases of the Skin on Dec. 19th, Dr. W. Knowsley Sibley, the President, being in the chair.—Clinical cases were shown by Dr. Morgan Dockrell, Mr. Christopher R. Kempster, and Captain W. Griffith. The President brought forward a series of seven cases of Alopecia, three boys and four women, the majority of which were "totalis" form originally; a free growth of young hair was observed in all the cases which had been treated by small doses of X rays and ionisation.

Reviews and Notices of Books.

Diseases of Children.

By A. DINGWALL FORDYCE, M.D. Edin., F.R.C.P. Edin., Lecturer on Diseases of Children, School of Medicine of the Royal Colleges, Edinburgh. London: A. and C. Black, Limited. 1916. Pp. 483. Price 10*s.* 6*d.*

IN this volume the author has attempted to provide for the use of students and practitioners a small but complete text-book of pædiatrics written on distinctly novel lines. Nearly all text-books on the diseases of children with which we are acquainted have been arranged in accordance with certain conventional and time-honoured traditions—that is to say, certain sections are devoted to diseases of the various systems, the digestive, the respiratory, the circulatory, and so on, while others deal with disorder of metabolism, nutrition and growth, and others with the infective processes. In this new work Dr. Fordyce has adopted the plan of arranging all the subject-matter dealt with on a systematic basis. This method appears to us to have involved the author in a great number of very difficult situations, and we cannot convince ourselves that the sacrifices which he has made to adhere to this plan have afforded any commensurate compensations in respect to uniformity or consistency of design.

The author has respected tradition in so far as the introductory chapters are concerned. Thus in common with other text-books we find a chapter on the healthy child, the examination of the sick child, the diseases of the newborn, and so on. These chapters are followed by one on congenital syphilis, which appears as difficult to consign to its proper niche in the system as tuberculosis, which for some reason or other is interpolated between a chapter on diseases of the alimentary system and another on diseases of the ductless glands, which, by the bye, covers diseases of metabolism also. The exact location of rheumatism appears also to have presented difficulties, for along with chorea it has a chapter to itself sandwiched in between one on diseases of the circulatory system and another on acquired heart disease. To give a few other instances of the dilemmas into which this systematic method leads the author, we may mention that mumps is forced into the chapter on diseases of the mouth and throat, measles into that on diseases of the respiratory system, and enteric into that on diseases of the alimentary system.

We are inclined to think that the author's evident penchant for the *reductio ad simplissimum* will be better appreciated by the student who is learning than by the practitioner who meets with the difficulties and realities of disease in the living subject. When reading certain of the chapters which deal with some of the most difficult problems in medicine, one cannot help being struck with the simplicity and the straightforwardness of the solutions which are provided. This method of reduction to the simplest possible terms finds one of its most striking examples in the chapter on the artificial feeding of infants. With certain judicious reservations the author relieves this subject of most of its difficulties by submitting certain uncomplicated formulas which he assures us give the best results when put into practice. These formulas are as follows: for the first month of life the infant is to be fed on a mixture of one part of milk and two parts of water, for the third month of life the strength is to be in the proportion of one part of milk and one part of water, and for the sixth month two parts of milk and one part of water, and so on for the remaining months. When we add that these mixtures may be reinforced with a small quantity of cream and sugar we know all that there is to be learned from these pages with respect to the compounding of food for the average healthy infant. This method appears to us to be altogether too simple; it is the method which towards the end of the last century gave the manufacturer of patent foods his opportunity and the faddist his occasion to elaborate strange and weird practices.

Apart from these serious objections on the ground of arrangement and on the ground of too much simplification we have only praise for Dr. Fordyce's new book. It is certainly accurate, extremely easy to read, and very complete. It is profusely illustrated, and printed with excellent headlines which catch the eye and emphasise the important points.

Growth in Length: Embryological Essays.

By RICHARD ASSHETON, M.A., Sc.D., F.R.S., Lecturer in Biology at Guy's Hospital, Lecturer in Embryology at the Imperial College, and Lecturer in Animal Embryology in the University of Cambridge. With 42 illustrations. Cambridge: At the University Press. 1916. Pp. 104. Price 2*s.* 6*d.* net.

To review a posthumous work of Richard Assheton is a melancholy duty. To those who knew him personally his death has brought the loss of one of the gentlest and most lovable of gentlemen: to science the loss has been of the most thorough and painstaking of embryologists. During his lifetime Assheton published many papers, each one distinguished by its thoroughness and accuracy, and we are glad to see that this volume contains a complete bibliography of his contributions to science. Two quite distinct portions are contained in the book, and only the first deals, strictly speaking, with growth in length; the second being a reprint of his well-known criticism of Driesch's conception of entelechy. The first portion of the volume contains the subject matter of three advanced zoological lectures delivered as part of the curriculum of London University at Guy's Hospital in 1913. It is in this part that most interest and novelty lies, and the thanks of all workers in embryology are due to Mrs. Assheton for publishing the lecture notes arranged by her husband.

In the preparation of the manuscript Professor Stanley Gardiner and Professor J. P. Hill have given their assistance, and the result is an eminently authoritative account of the early stages of development of a wide series of animal types. The main conclusion of the work—that these early stages give no indication whatever for imagining that chordates are derived from highly organised invertebrates—is based upon the study of the relation of the growing body axis to the plane of the gastrula in chordates and invertebrates respectively. Not only this, but there is also the very definite finding that the differences displayed are so great that there is no alternative to believing that the chordates arose as far back as the cœlenterates or their immediate descendants.

The volume is a record of a life's work of accurate and painstaking observation.

LIBRARY TABLE.

Clinical Methods: A Guide to the Practical Study of Medicine. By ROBERT HUTCHISON, M.D. Edin., F.R.C.P. Lond., and HARRY RAINY, M.D. Edin., F.R.C.P. Edin. Sixth edition. London: Cassell and Co., Limited. 1916. Pp. 664. Price 10*s.* 6*d.* net.—The sixth edition of this indispensable manual has only increased in size by eight pages, but reference to the matter shows that a thorough revision has taken place, which has naturally resulted in many changes in the chapter on clinical bacteriology. A paragraph is inserted on modern methods of examination of the myocardium, and the nomenclature of the B.N.A. has been given in brackets after the old anatomical names. Altogether the book merits the large circulation which it has achieved.

Help for the Deaf: What Lip-reading is. By E. F. BOULTBEE. London: Hodder and Stoughton. 1916. Pp. 196. Price 2*s.* 6*d.*—Miss Boultbee's book is a welcome addition to the limited literature dealing with lip-reading and with the benefits brought by it both to the adult deaf and to those who have lost their hearing after the acquisition of language. Miss Boultbee not only writes as an experienced and sympathetic teacher, but as one who has retained all her original enthusiasm for her work and has in no wise neglected her ideal, that of placing the deaf person as far as possible on a level with the hearing. Lip-reading, as she points out, may prove of inestimable value, mentally, morally, and physically, to the person who masters the art. She explains how it develops alertness, closeness of observation and concentration among the deaf, helping them to hold at bay a tendency to apathy and suspicion, and rousing them from a form of self-absorption to which they are naturally liable, and which so often leads to definite ill-health. She does not attempt to disguise the difficulty either of teaching or acquiring the accomplishment of lip-reading—the task undertaken by both tutor and disciple is a hard one; but she shows how the deaf people who master the art acquire also cheerfulness and tact in the relations of life which go far to enable them to take an ordinary place

in society. A section of the book sets out the phonetic sounds of the alphabet, as distinguished from the "names" of the letters, with the positions assumed by the tongue and lips in the utterance of the sounds. Another section gives the hearing reader some idea of the difficulty experienced by deaf children in the comprehension of idiomatic language, a point that needs to be grasped by people who deal with those who are short of a valuable sense. The serious parts of the book are interspersed with anecdotes which, whilst making it easy and attractive reading, give courage to the deaf reader, and should enlighten hearing friends as to their difficulties. Miss Boultbee's book does not quite replace Mr. Nitchie's book on lip-reading, which goes further in many directions, but we cordially recommend it to those for whom it has been written.

Appleton's Medical Dictionary. Edited by SMITH ELY JELLIFFE, M.D., assisted by CAROLINE WORMELEY LATIMER, M.D. London and New York: D. Appleton and Co. 1916. Pp. 945. Price 15*s.* net.—The editor of this handsome and convenient volume speaks of language as the chief tool of the intellect, and offers his dictionary as an instrument for a service reaching far beyond itself to the minds which are to supply the motive and directing force. He is himself a professor of diseases of the mind and has had the assistance as special contributing editors of University teachers in anatomy, physiology, chemistry, pharmacology, medicine, gynæcology, and pathology. The result of this collaboration is a dictionary complete in medical and ancillary terms, with accurate definitions and formulæ, and with full names and dates to authors. An appendix of 50 pages contains notes on analyses of body fluids, dietaries, the feeding of babies, common poisons, and other useful matter, while many tables are incorporated in the text. During six months' use we have noticed a few slips of a minor character, but the volume is likely to compete with success in the struggle for existence among medical dictionaries.

1. *Mysteries of Life: A Book for Boys and Girls.* By STANLEY DE BRATH, M.Inst.C.E. London: George Allen and Unwin, Limited. 1915. Pp. 260. Price 4*s.* 6*d.* net.—2. *The World's Wonder Stories for Boys and Girls.* By ADAM GOWANS WHYTE. London: Watts and Co. 1916. Pp. 270. Price 6*s.* net.—Mr. de Brath, who was lately headmaster of Preston House Preparatory School at East Grinstead, has no lower aim than to give to boys and girls a working perception of the presence of God in nature and in themselves. He asks the questions What? How? and Why?, and answers them by describing the history of the earth, the mysteries of sex, pain, and the kingdom of heaven. Most of what he writes is far above the head of any ordinary child, and much of it deals freely with the sad and sordid things of life. But Mr. de Brath has the mystic's mind and a gentle touch, and youthful readers will not be harmed by his frankness, while teachers will find material for many a useful lesson.—"The World's Wonder Stories for Boys and Girls" is another book and an excellent one, to arm the older person against the child's questions: How? Why? When? and Where? It introduces the child to astronomy, biology, the origins of religion and morality in a way which he can readily apprehend. A number of excellent illustrations have been borrowed from many sources and the cover is embellished with an appropriate coloured design by H. S. Tuke, R.A.

Outlines of Medical Jurisprudence with Special Treatment of Toxicology and Insanity. By RAMES CHANDRA RAY, L.M.S., Lecturer on Forensic Medicine, College of Physicians and Surgeons of Bengal, Calcutta. Third edition. Calcutta: The Hare Pharmacy. 1916. Pp. 494. Price 4 rupees.—The author has added 40 pages to his work, embodying four years of experience, since the last edition. We have already remarked on his genius for compression, and although there are a few verbal misprints there is hardly an unnecessary word in the whole book. The "mass of useful tables," as the author calls it, in the appendix has been added to.

JOURNALS.

Quarterly Journal of Experimental Physiology. Editors: E. A. SCHÄFER, W. D. HALLIBURTON, C. S. SHERRINGTON, E. H. STARLING, and A. D. WALLER. Vol. X., No. 1. London: Charles Griffin and Co., Limited. 1916. Pp. 1–95. Price 7*s.* 6*d.*—The whole of this number is occupied with a combined physiological and psychological study of Cutaneous Sensation after Nerve-division, by Edwin G. Boring, describing work done in Cornell University, and illustrated by 98 figures in the text and a plate. Trotter and Davies supplemented Head's work on the changes in the sensibility of the skin upon the division and suture of a cutaneous nerve, and the author has followed with intensive work on the lines of Trotter and Davies. He insists as an important factor on the introspective competence of the subject. The work is the product of two laboratories—physiological and psychological. The cutaneous sensations—sensibility of the hairs, two-point discrimination and localisation over the greater part of the volar surface of the left forearm—were tested before the nerve selected for division, the anterior branch of the internal cutaneous of the left arm, was divided. For 15 months preceding the operation the subject devoted from three to eight hours a week to preliminary work, during which he was practised in the discrimination of two points, and in localisation, in order to obtain quantitative norms of the area investigated. Contact, penetrating and dull pressure, granular pressure and sharpness were investigated, and the conclusion is reached that there are four indisputable qualities that appear upon mechanical stimulation of the skin; tickle-contact, penetrating pressure, dull pressure, and sharpness, the usual but less descriptive terms being: contact, cutaneous pressure, subcutaneous or deep pressure, and pain. Deep pressure and cutaneous pressure are introspectively distinguishable. Warmth and cold did not present the same introspective difficulties as did pressure and pain. The means employed for the study of each cutaneous sensation are fully described in the text. Section of the nerve on the author himself was made on Jan. 10th, 1913, at a definite position, and thereafter pressure, pain, cold, warmth, distribution of sensibility, return of sensibility, localisation, and two-point discrimination were all investigated quantitatively. A careful study of the paper will well repay the student of neurology.

The Philippine Journal of Science, Section B, Tropical Medicine. Vol. XI., No. 3.—Taking the view that disease is not infrequently acquired from infection while bathing, and that it is of paramount importance that water used for bathing should be free from infectious material, Mr. Charles E. Gabel, of the Biological Laboratory, Bureau of Science, Manila, instituted a series of bacteriological examinations of certain swimming pools in that city, and has embodied his observations in a paper in this number of the *Journal.* Bathers who fail to cleanse themselves properly before entering such a pool, or those who are chronic carriers or disseminators of pathogenic organisms, may contaminate the water, and thus infect other bathers. Exaggerated accounts of public bath infections have caused many persons to look with aversion upon water that has been in contact with other people. Certain experiments were carried out by Mr. Gabel, and as a general result he states that when no disinfectant was added there was a steady increase in the number of bacteria in the swimming pools. This increase was exceedingly high on the last day of the week during which the water had been used. When disinfectants were added the bacterial curve was lowered and often became more irregular. Copper sulphate applied at the beginning of the week permitted an increase throughout the period; sometimes, however, a slight reduction occurred. Calcium hypochlorite applied once a week showed good effects at first, but permitted an increase of bacteria towards the end of the week. A daily addition amounting to 0·25 part of available chlorine per million parts permitted a considerable increase of bacteria, while 0·5 part gave the best results. When the comparative costs and disinfecting power are considered, antiformin and copper sulphate are not so valuable as calcium hypochlorite. The latter when added daily in amount equivalent to 0·5 part chlorine per million parts water, is recommended for the disinfection of these swimming pools, as it is the best and most economical means of keeping the number of intestinal and other bacteria within safe limits throughout the week during which the water is in use.—The second of the two papers comprised in this number of the *Journal* is by Dr. E. H. Ruediger, who continues his studies on the Wassermann reaction with glycerinated human serum. His new experiments corroborate generally his previous conclusion, that chemically pure glycerine is a suitable preservative for human serum which is intended to be tested by the Wassermann reaction.

THE LANCET.

LONDON: SATURDAY, DECEMBER 30, 1916.

THE ANNUS MEDICUS 1916.

MEDICINE.

DURING the past year the attention of physicians has mainly been directed to matters associated with the health of the troops. Thanks to the vast and continuous efforts of the officers of the Royal Army Medical Corps the amount of preventable disease has been reduced to a minimum, and the effects of the campaign on the nervous system have been productive of more research and observation than have the infectious fevers.

Dysentery.

When the evacuation of Gallipoli was accomplished the number of cases of dysentery in the Expeditionary Force rapidly became less; consequently the opportunity of studying the acute cases was lost, but doubtless much remains for investigation in following up the more chronic forms.

In a paper delivered before the Royal Society of Medicine Lieutenant-Colonel Sir RONALD ROSS recorded the results which have been obtained in the treatment of dysentery, especially in regard to the amœbic form. He strongly urged as a routine treatment the hypodermic injection of emetine hydrochloride, and supported the orders of the Principal Director of the Medical Services of the Mediterranean Forces that it should be used in every case of suspicious dysentery without waiting for a definite diagnosis as to the exact nature of the case. He pointed out that there can be no doubt that the sooner treatment is commenced the more it is likely to succeed. Once the amœbæ have begun their destructive trenching and mining under the mucosa of the intestine there is apparently in many cases no natural limit to their activities, and they will soon end by removing up to 90 per cent. or more of the surface. Every hour, therefore, counts at the beginning of the infection, and the delay of a few weeks often means almost irreparable ruin to the colon, even if the patient survives. The opinion was also expressed that unless there was very strong reason for continuing emetine it should be remitted, at least for a time, after about ten days.

Attention has been drawn to the treatment of amœbic dysentery with emetine bismuth iodide, and considerable success has been claimed. The amœbæ disappeared rapidly, as did also the blood and mucus, together with the pain and other symptoms. But as Dr. G. C. LOW and Mr. C. DOBELL pointed out, whether or not a complete sterilisation has been effected can only be determined by examinations conducted over a long period of time. These observers also found that this compound of emetine produces much more disagreeable symptoms than emetine hydrochloride given by the needle. Some of the patients suffered so much from vomiting and diarrhœa that the treatment had to be discontinued.

Typhoid Fever.

Captain T. H. WHITTINGTON, R.A.M.C.(T.), published a report on the use of stock vaccine in infection by the *Bacillus typhosus*, with an analysis of 230 cases. One half of these were on vaccine treatment, and the other half were the selected controls. The results were not encouraging. It would appear (*a*) that it is in just those cases in which the physician so much requires help that vaccine is disappointing; (*b*) that vaccine neither shortens the fever nor reduces the number of complications in even that class of case which is likely to do well; and (*c*) that there is a decided suspicion that vaccine increases the incidence of hæmorrhage. Naturally the conclusion arrived at in this report is that the use of a stock vaccine in typhoid cannot be recommended as a routine treatment.

In inoculated individuals the diagnosis of the enteric fevers not infrequently gives rise to difficulties. Several investigations have been carried out on this subject. Major G. DREYER, R.A.M.C., and Captain E. W. AINLEY WALKER, O.T.C., furnished a report to the Medical Research Committee in which some interesting results were mentioned in regard to the agglutinin reaction. In a certain number even of the mildest cases of these infections the rise and subsequent fall in the agglutinin titre are so definite that the diagnosis could never be in doubt. But in other cases the rise and fall of the curve are much less marked, and differences of opinion may exist as to whether the case is of active infection or not. In order to assist in the elucidation of such cases these observers formulated certain points which are of importance in the interpretation of the agglutinin curves, and these should be of practical value in assisting clinical work.

Paratyphoid Fever.

We published an interesting communication on paratyphoid fever in our issue of Feb. 26th by Lieutenant-Colonel W. H. WILLCOX, R.A.M.C., based on his experience in the Mediterranean area. He estimates that paratyphoid is undoubtedly at the present time the most important disease to be considered from the military point of view, since by its frequent occurrence at all periods of the year it causes such a large amount of incapacity for duty. It is a preventable disease, and every means must, of course, be taken to preclude its occurrence. Amongst the chief measures mentioned by him are the following: 1. Early recognition of the clinical symptoms of the disease and early clinical diagnosis, which must be acted upon without delay. 2. Bacteriological investigation for the early diagnosis of cases and for the recognition of suspected carriers of the disease. 3. General preventive measures, such as disinfection of clothing, bedding, tent, &c., of the patient. 4. Prophylactic inoculation against the disease.

Typhus Fever.

Typhus fever in Serbia formed the subject of the Chadwick lectures delivered at the Royal Society of Medicine by Dr. R. O. MOON. He gave an interesting account of his experiences in Serbia and the difficulty experienced in dealing with the outbreak. He stated that although the specific cause of typhus fever has not yet been definitely demonstrated, yet all analogy points to its being due to a micro-organism, and that it is conveyed by means of lice. Hence, the most direct way of stopping the spread of the disease is to destroy the lice, and he described the measures of inspection and disinfection which should be adopted. With regard to treatment, he maintained that absolute rest in bed was, of course, essential. The sick-room should be large and airy, with the windows open night and day, and as far as possible the hospital attendants should be individuals who have been rendered immune by an attack of the disease. Thorough ventilation was really the most important factor in the treatment; and not only is it the most efficacious antipyretic but it also has a very favourable effect upon the nervous system; the violent headache and insomnia of the early stages of the disease are lessened by this method more than by anything else. The intensity of the delirium is diminished and the mental condition of the semi-comatose patient appears to be favourably influenced.

Cerebro-spinal Fever.

The outbreak of cerebro-spinal fever in several military training centres during the winter of 1914–15 created at once an urgent demand and a valuable opportunity for investigation of the outstanding problems of that disease. When the epidemic declined in the summer months Professor F. W. ANDREWES, Professor W. BULLOCH, and Professor R. T. HEWLETT were invited by the Medical Research Committee to form an advisory committee for the purpose of sifting and summarising the experience gained in the scattered bacteriological stations. The report drawn up is one of exceptional interest and value. It concerns itself chiefly with bacteriological and epidemiological questions. The authors insist that there is no need to look beyond the meningococcus (*Diplococcus intracellularis meningitidis*) for the essential cause of the disease; nor any warrant from facts for seeking to invoke the obscure phenomena of "pleomorphism" in explanation of the anomalous features. Further, their work goes to show that the conception of the meningococcus as a bacterial species

of which all the members are identical, must give place to the recognition of a meningococcus group, including several types of races, just as has been shown in connexion with the Gärtner group of bacilli, and more recently in connexion with the pneumococcus. An interesting feature of the report is the new point of view which the committee takes up, tentatively as yet, with regard to the origin of carriers. Hitherto the carrier condition has usually been attributed to contact with a victim of cerebro-spinal fever, but now it is suggested as probable that a large proportion of the carriers found in any group of contacts "were not infected from the case of cerebro-spinal fever, but represented the proportion of carriers already present amongst the population where the case had arisen." From observations made on carriers it was concluded that the causal organism is not easily dislodged from the naso-pharynx, and that carriers would be little liable to convey infection if they always took the precaution of coughing and sneezing into some handkerchief or piece of rag which could be burned. The danger of transfer by saliva is probably slight, as the streptococci which abound in that secretion are strongly inimical to the meningococcus, while the microbe is also very intolerant of drying.

Beri-beri.

Lieutenant-Colonel W. H. WILLCOX contributed an interesting article to our columns on beri-beri based upon the careful study of over 50 cases seen during the latter half of the past year in the Mediterranean area. It is generally recognised that diet plays a very important part in the causation of the disease, but in many of the cases, in addition to the factor of diet, there was evidently some toxic influence at work, such as a previous attack of dysentery, chronic diarrhœa, paratyphoid, purpura, or jaundice. In the Dardanelles series the presence of a toxic factor derived from such diseases necessitated a special diet, which, though suitable to the diseases in question, was almost devoid of anti-beri-beri vitamine, and so "an additional dietetic factor was added to a borderland case, thus causing the development of beri-beri."

Shell Shock.

Much has been written and various discussions have taken place during the year on the condition known as shell shock. Ever since the term has been introduced there has been a tendency to consider that the cases might be divisible into two classes. One class has been assumed to include various exaggerations of pre-existing forms of mental deficiency, the second has been held to be akin to hysterical manifestations. The number of cases now investigated appears to afford conclusive evidence that the subject of shell shock is not likely to be disposed of on either hypothesis. The Lettsomian lectures by Major F. W. MOTT on the Effects of High Explosives upon the Central Nervous System, and the papers which we have published by Lieutenant-Colonel CHARLES S. MYERS upon the Study of Shell Shock, refer to many of the latest phases of scientific investigation and speculation concerning the subject. The terrible experiences through which many of the sufferers have passed are well known, and Colonel MYERS attaches great importance to the influence of past history, while Major MOTT emphasises the harmful results likely to arise from the repetition of the incidences in the form of dreams. The latter observer considers that the symptoms of headache, weariness, loss of power of concentration, irresolution, and mental fatigue constitute a neurasthenic condition frequently found as a result of shell shock, and he explains the condition as the acquirement of the habit of drawing on the reserve of neuro-potential; the patient is unable, through insomnia or sleep disturbed by terrifying dreams, worry, and anxiety, to regain the balance and return to the normal conditions of automatic renewal of nervous energy as fast as formerly. Major MOTT endeavours to trace some definite structural or pathological change in the central nervous system. He assumes that though there may be no evidence to show that the living matter is altered, the symptoms point to a physical or chemical change and a break in the links of the chains of neurons which subserve a particular function. He also attaches importance to physical trauma, concussion, or "commotio cerebri," and he appears to allow for some chemical changes due to poisoning with CO and for the resulting deoxygenation of the blood.

At a discussion on Shell Shock at the Royal Society of Medicine many opinions were expressed as to the origin, symptoms, and treatment of this condition. Amongst others Dr. HENRY HEAD gave his view, which was that "shell shock" was a heterogeneous collection of different nervous affections from concussion to sheer funk, which have merely this much in common, that nervous control has at last given way. Dr. E. G. FEARNSIDES, in relating his experiences, drew attention to the mode of onset. The cases in which the symptoms appeared slowly were among the older non-commissioned officers, in whom a breakdown occurred after a prolonged period of stress when adequate sleep had been for a long time unobtainable, whilst in cases of sudden onset the average age of the men had been found to be distinctly lower. The relation to epilepsy was also discussed, for instances have been recorded in which the shock of a high-explosive shell has been found to be the starting-point of true epilepsy in men who had not previously suffered from it. Captain E. F. BUZZARD'S paper, entitled "Warfare on the Brain," which is published in our columns this week, discusses the subjects of shell shock and traumatic epilepsy very interestingly.

Dr. H. WILTSHIRE, after considerable experience at No. 12 General Hospital, is of opinion that gradual psychic exhaustion from continued fear is an important disposing cause of shell shock, particularly in men of neuropathic predisposition. In such subjects it may suffice to cause shell shock *per se*. In the vast majority of cases of shell shock he believes the exciting cause to be some special psychic shock. Horrible sights are, in his view, the most frequent and potent factor in the production of the shock; losses and the fright of being buried are also important in this respect.

Trench Nephritis.

The large number of men returning from the front suffering from nephritis has naturally given rise to much speculation. Captain W. LANGDON BROWN opened a discussion on the subject at the Royal Society of Medicine. He maintains that the cases are true examples of acute nephritis, as shown by (*a*) the combination of œdema with albuminous urine containing casts; (*b*) the nature of the proteins in the urine; (*c*) the tests for renal permeability; and (*d*) post-mortem evidence. The cases had been too prevalent to be merely accidental, and the close similarity of the symptoms pointed to a common cause. The curve of incidence suggested an infective agent, as did also the unequal degree to which the different units were affected. So far, bacteria had not been found responsible for the infection. He considered that there was a specific organism responsible which resembled, but was not identical with, that causing scarlet fever. In the discussion which followed Professor F. W. ANDREWES stated that there was nothing histologically to distinguish trench nephritis from other forms of acute and subacute nephritis. The acute glomerular nephritis of scarlet fever was comparable in all respects with trench nephritis. He had failed to find any micro-organisms in the urine or kidneys.

Cardiac Disabilities.

In opening a discussion on the "Soldier's Heart" Sir JAMES MACKENZIE defined this condition as characterised by exhaustion of the circulatory system, shown by breathlessness, a sense of suffocative and præcordial discomfort, and a frequency which if not raised during rest becomes unduly increased on slight exertion. But the symptoms are not confined to the circulatory system, and in 90 per cent. at least of the cases observed this system is not the one primarily affected; the circulatory symptoms are part of a general illness in which the central nervous system has a large share. Apart from the vaso-motor disturbances, there is an irritability of temper, a depression of spirits, an inability to concentrate thought, a nervous tension liable to lead to sudden outburst and a tendency to focus the attention constantly on the condition of the heart, which imply a profound influence on the nervous tissues. In regard to treatment, it is important to note Sir JAMES MACKENZIE'S opinions. Where the condition is one of simple "soldier's heart," absolute rest is not indicated; rest in bed may tend merely to further weaken the cardiac muscle. He maintains that appropriate and not excessive exercise is the right treatment both for the heart and the depression of spirits. Captain J. PARKINSON, as the result of an inquiry into the various conditions which lead men on active service to report sick with symptoms suggesting heart disease, points out that among soldiers in training and on active service are a number

who complain of cardiac symptoms on exertion but show none of the physical signs indicative of heart disease. These men, he states, are the subjects of a cardiac disability which is unmasked by the exertion required of a soldier. It is not a specific variety of heart disease, and needs no such name as "soldier's heart." In about half the cases in his series the disability had been present to some extent in civil life, and was therefore not the result of military service. Captain PARKINSON finally expresses the opinion that the absence of abnormal physical signs in the heart of a soldier should not prevent his discharge from the Army if, under training or on active service, he shows breathlessness and præcordial pain whenever he undergoes exertion well borne by his fellows.

SURGERY.

In surgery more than in any other department of medicine the war has overshadowed everything else. The few meetings of the medical societies which have dealt with surgical subjects have had reference to the war only.

Treatment of Wounds.

The foremost of the questions, discussed over and over again, has been that of the best method of treatment of the wounds received in war, and in this war these are almost all gunshot wounds, for of wounds of the *arme blanche* there have been very few indeed. The young surgeon must find himself very bewildered as to the choice he should make for the treatment of gunshot wounds, though it might well be thought that after two and a half years of war surgeons would have come to some sort of an agreement as to the best method to employ. But it is not so at all. The variety of treatment is great, and equally good results are claimed from each technique. The method that is the most widely known and received is that introduced by Colonel Sir ALMROTH WRIGHT. He irrigates and dresses the wound with a hypertonic solution of common salt; at first the liquid contained also some sodium citrate, but that has now been found to be unnecessary, and its inclusion needlessly complicates the preparation of the solution. This hypertonic solution has several actions, but its main function is to stimulate the effusion of lymph from the vessels of the walls of the wound. This effused lymph possesses important antiseptic powers and the lymph also contains leucocytes possessing phagocytic properties. It is clear that the method has been founded on careful laboratory experiments, and the truth of the foundations on which the method is based is shown by the success of it in practice.

Probably the next most popular application to wounds is a solution containing hypochlorite. One of these is eusol, and another is "Dakin's solution." Both of these have been employed very largely, and of Dakin's solution it has been said that it possesses 30 times the antiseptic power of carbolic acid, while at the same time it has little harmful effect on the tissues. CARREL has introduced a special method of using a slightly modified Dakin's solution, and he claims that if the details of his method are followed a septic wound can be rendered sterile in about a week. A still stronger chlorine compound has been introduced by DAKIN, it is called "chloramine," or "tolamine"; it is said to be five times stronger than DAKIN'S original solution. The use of iodine in wounds seems to be completely discredited, and it appears to be now very little employed. Mr. A. E. MORISON introduced the use of magnesium sulphate and glycerine, and those who have seen its action have expressed themselves as very satisfied with the results obtained. Captain W. B. DAVY has found much benefit from the use of salt tablets wrapped in gauze, packed into the wound, and when the salt dissolves the salt acts as a drain. Major A. J. HULL has introduced the use of "salt sacs" in the treatment of gunshot wounds. A two-walled sac is made of bandage, between the walls of which four layers of gauze are placed, the interior is filled with salt, and the mouth of the sac is sewed up. One or more of these sacs are used to fill the wound, any spaces between being occupied with gauze. The drainage is said to be perfect, every portion of the wound being drained by the osmotic action of the salt. The dressing does not, as a rule, need changing for a week or so, and the results are said to be excellent.

Dr. LOUISA GARRETT ANDERSON, Dr. HELEN CHAMBERS, and Miss LACEY have conducted at the Endell-street Military Hospital an investigation into the relative value of various methods of dealing with septic wounds, and amongst other results they have found that a solution of salicylic acid, about two drachms of a saturated alcoholic solution to a pint of water, forms a very effective lotion to a septic wound, for the crystals of the salicylic acid become deposited in all parts of the wound, and a diminution in the number of bacteria on the surface of the wound occurs. They have also found a mixture of salicylic acid and gelatin very useful; the mixture, with the gelatin liquefied by heat, is poured into the wound and fills the recesses accurately. Major T. F. BROWN has obtained very satisfactory results with picric acid; it is known to be a very efficient antiseptic, and as it also possesses marked anodyne properties, and as it stimulates the growth of granulation, its employment is likely to be extensively useful; the main argument against it appears to be that at the present time picric acid is being so widely employed in the infliction of wounds that the Munitions Department might raise objections to its employment in their cure. Major GEORGE STOKER has experimented with the application of ozone in the treatment of septic wounds, and he has found it very useful. At first there is an increase in the amount of pus formed, but it soon diminishes in amount, and before long the discharge becomes serous in character.

It will have been seen that there is a very large number of applications from which the surgeon can choose; we have no doubt that good results can be obtained from any of them and from many other dressings which we have not mentioned, but in practice the exigencies of time and space go far to limit the number of methods which are really available.

Captain R. H. JOCELYN SWAN and Mr. KENNETH GOADBY have met with no small measure of success in the treatment of septic wounds by means of vaccines, and, in fact, Captain SWAN now makes it a rule that every case arriving from overseas with a septic wound shall, on entrance into the hospital, have an initial dose of a mixed polyvalent vaccine of proteus and streptococcus. He is satisfied that this treatment has to a large extent assisted the other methods of treatment employed. It tends especially to prevent secondary hæmorrhage. In order to control the results he had other wards in which no vaccines were employed, and it was in those cases not treated with vaccine that secondary hæmorrhage occurred. He points out that it is unreasonable to expect that a vaccine should cure a septic wound if unaided by the ordinary surgical measures such as drainage.

Head Injuries.

The proportion of head injuries is not so great now as it was at an earlier stage of the war, and this is, in part at all events, due to the fact that the steel helmets have gone far to reduce the number of cases. A bullet travelling at high speed can easily penetrate the helmet, but it arrests low-speed bullets, and it is specially useful in stopping shell fragments. Major ALEXANDER DON has described his experience with head cases at a casualty clearing station, and he comes to the opinion that the linear or angled scalp incision, as practised by most French surgeons, with a small trephine opening, is more useful than the large scalp flap as practised for the most part by the British surgeons, for the results, as he has seen them, are better. Captain H. F. WOOLFENDEN has described two cases in which during the operation for the removal of a foreign body from the brain he opened the lateral ventricle, and yet the patients recovered, the sepsis present being but slight.

Captain H. ELWIN HARRIS has reported an interesting case in a man who, while being dressed for a wound in the hip, was struck by another bullet which made him unconscious. No bullet wound was found, but from a consideration of the circumstances and the examination of the skiagram, it is clear that the bullet entered at the left inner canthus, passed between the eyeball and the inner wall of the orbit, and that it then entered the sphenoidal sinus, after wounding the optic and the third nerve. By the expenditure of a large amount of trouble Captain HARRIS at length succeeded in withdrawing the bullet through the left nostril. The patient recovered rapidly.

Sir WILLIAM J. COLLINS has described a case in which very extensive destruction of the right side of the face from the ear to the nose had occurred. Seven operations were performed before the patient came to England, and two further plastic operations were performed; and then an artificial

cheek was designed of painted and moulded copper-plate with an eye attached and carrying a pair of spectacles, with a very satisfactory cosmetic result, as shown by a photograph published in these columns.

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and the minimal quantity necessary should always be administered. Even in cases where the amnesia up to that time is complete it is often necessary to give a little chloroform or ether as the head is passing over the perineum. If suitable cases are selected, if minimal doses are used, and if the condition of the mother and child is carefully supervised, the danger of fœtal asphyxia or post-partum hæmorrhage can be reduced to a minimum. A method of this kind which requires the constant supervision of the patient by a medical man, if all risks are to be eliminated, is obviously only available for a small number of patients. If it is to be used on a large scale without proper and continuous supervision, as appears to be the intention of those who at the present time are trying to make its use more generally available, disaster will certainly follow. Scopolamine is a drug which is difficult to standardise, and every now and then a patient will be found to exhibit a marked idiosyncrasy to its action. The whole matter is one which would bear further investigation, and those who propose to employ this method in large numbers of lying-in cases should be well aware of the special dangers which attend it and the necessity for a strict observance of the proper technique for its administration.

Maternal and Child-Welfare Centres.

A large number of maternity and child-welfare centres have been started in different parts of the country and a great deal of very good work is being carried out in them. This work can, however, only be carried on properly when full use is made of the information furnished by the Notification of Births (Extension) Act, 1915. The important subject of maternal mortality and its relation to infant mortality was fully considered in a supplement to the Forty-fourth Annual Report of the Local Government Board by the medical officer of the Board. As he points out, had the birth-rate been the same in 1914 as it was in 1876, 467,837 additional infants would have been born in the former year. These figures illustrate the immense importance of measures directed to saving the lives and maintaining and improving the standard of health of the mothers and their children.

The figures quoted show, further, that the death-rate, from conditions other than puerperal fever, adversely affecting child-bearing, is much lower in London than in the provinces. This means that no less than 800 women die each year in England and Wales whose lives would be saved if the experience of the rest of England were as favourable as that of London. If puerperal fever were to be eliminated, as it practically has been from lying-in hospitals, a further saving of some 1100 lives would be secured annually in England and Wales.

The majority of the deaths of mothers from child-bearing are caused by puerperal fever, hæmorrhage, and convulsions. Most of these conditions are due essentially to preventable causes. The report further shows that an excessive mortality of mothers means also an excessive proportion of still-born infants and an excessive proportion of deaths of infants in the early weeks after live birth. To remedy these conditions it is very necessary that skilled assistance should be available at maternity centres. The notification of births and of puerperal fever requires to be made more effective, and there is a need for the provision of pathological aids for diagnosis.

The great importance of ante-natal work both for the mothers and their unborn children was emphasised at a discussion held on the "Need for Greater Care of the Woman during Pregnancy and Childbirth" at the Obstetrical Section of the Royal Society of Medicine at the November meeting. The discussion was opened by Dr. S. G. MOORE, of Huddersfield. The very great importance of the adequate supervision of the pregnant woman was insisted upon by all those who took part in the debate, and the question of the notification of pregnancy as an aid in this direction was mooted but did not meet with much encouragement. It is difficult to see how the notification of pregnancy ever can be made compulsory; but unless pregnant women can be persuaded voluntarily to give notice of their condition to medical men, the complete utilisation of the preventive measures available for the reduction of the maternal mortality in child-bed seems impossible. The most important factor in the whole scheme of maternity centres and child-welfare centres is the home visitor. If the right class of women are obtained for these appointments, they will be able to bring a very powerful personal influence to bear upon pregnant women to persuade them in all cases, whenever necessary, to seek medical advice for any of the disorders of their condition. If it were only possible for every pregnant woman to be under the care of a medical man during the term of her pregnancy, not only could the maternal mortality in child-bed at once be lowered, but a lowering of the early infantile mortality would inevitably follow. The subject is one which calls for careful study and consideration at the hands of a number of medical men and women, particularly at the present time, when the lives of mothers and of their children are so important.

OPHTHALMOLOGY.

There is little to record of progress in ophthalmology except in connexion with the problems associated with the war. The injuries met with are of all degrees of severity. In the worst cases the eye is irretrievably damaged and there is much destruction of lids and neighbouring parts. These injuries leave scope for much ingenuity in plastic operations. Often the lids are so much damaged that the best procedure is to remove the conjunctiva and cover the whole surface with skin. The wounds are often septic, and excision of the eye in these cases is accompanied with risk of meningitis. The surgeons at the front are therefore often eviscerating these eyes, leaving a collar of sclerotic around the optic nerve. These cases usually require further operation subsequently, as the cup of sclerotic becomes filled with granulation tissue which keeps up a continuous discharge. Moreover, the sclerotic is badly supplied with blood-vessels and necroses; hence it is necessary to dissect it out. Wounded lids and sockets often have dense bands which prevent the wearing of an artificial eye. Contracted sockets have always been very difficult to deal with, but we may hope for some improvement in methods as the result of so extensive an experience.

During the war injuries to the eyes have resulted in an extraordinary variety of lesions in the fundus oculi. Hæmorrhages, ruptured choroids, retinitis proliferans, pigmentation, and so on, are very common, and present many interesting features. There is a wealth of material for painstaking investigation and record, but, unfortunately, no one has leisure for such peaceful pursuits.

Intraocular Foreign Bodies.

In every war-wounded eye there is the possibility of the presence of an intraocular foreign body. One of the base hospitals in France has a giant magnet, and all the cases passing through this hospital are put up to the magnet as a routine measure. Unfortunately, many of the foreign bodies are non-magnetic. It is therefore necessary in almost every case of wounded eye to have skiagrams taken, and extremely accurate localisation is necessary. This can only be effected by special apparatus, which has not always been available. For this and many other reasons it would be better if there were more concentration of the eye cases, and there is evidence that the authorities are adopting this view. During the past year the subject of foreign bodies in the eye has been discussed at the annual congress of the Ophthalmological Society of the United Kingdom, and the war aspects were duly borne in mind. Where one eye only is injured the surgeon's chief anxiety is often the danger of sympathetic ophthalmitis in the other eye. The treatment, however, is based on exactly the same principles as in civil practice, and it is a gratifying sign of efficient supervision that few, if any, cases of sympathetic ophthalmitis have yet occurred.

Nervous Affections.

Apart from actual lesions of the eyes themselves the nervous affections of the visual apparatus have attracted most attention. The amblyopia associated so frequently with so-called "shell shock" has been discussed by ophthalmologists, neurologists, and psychologists. It may be recalled that the Russo-Japanese War gave rise to many cases of wound of the occipital lobes of the brain, and that these formed the subject of an admirable monograph by a Japanese author. Similar cases have been studied in this war by GORDON HOLMES and W. T. LISTER, more especially with reference to the cortical representation of the macula. Their paper before the Section of Ophthalmology of the

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The figures quoted show, further, that the death-rate, from conditions other than puerperal fever, adversely affecting child-bearing, is much lower in London than in the provinces. This means that no less than 800 women die each year in England and Wales whose lives would be saved if the experience of the rest of England were as favourable as that of London. If puerperal fever were to be eliminated, as it practically has been from lying-in hospitals, a further saving of some 1100 lives would be secured annually in England and Wales.

The majority of the deaths of mothers from child-bearing are caused by puerperal fever, hæmorrhage, and convulsions. Most of these conditions are due essentially to preventable causes. The report further shows that an excessive mortality of mothers means also an excessive proportion of still-born infants and an excessive proportion of deaths of infants in the early weeks after live birth. To remedy these conditions it is very necessary that skilled assistance should be available at maternity centres. The notification of births and of puerperal fever requires to be made more effective, and there is a need for the provision of pathological aids for diagnosis.

The great importance of ante-natal work both for the mothers and their unborn children was emphasised at a discussion held on the "Need for Greater Care of the Woman during Pregnancy and Childbirth" at the Obstetrical Section of the Royal Society of Medicine at the November meeting. The discussion was opened by Dr. S. G. MOORE, of Huddersfield. The very great importance of the adequate supervision of the pregnant woman was insisted upon by all those who took part in the debate, and the question of the notification of pregnancy as an aid in this direction was mooted but did not meet with much encouragement. It is difficult to see how the notification of pregnancy ever can be made compulsory; but unless pregnant women can be persuaded voluntarily to give notice of their condition to medical men, the complete utilisation of the preventive measures available for the reduction of the maternal mortality in child-bed seems impossible. The most important factor in the whole scheme of maternity centres and child-welfare centres is the home visitor. If the right class of women are obtained for these appointments, they will be able to bring a very powerful personal influence to bear upon pregnant women to persuade them in all cases, whenever necessary, to seek medical advice for any of the disorders of their condition. If it were only possible for every pregnant woman to be under the care of a medical man during the term of her pregnancy, not only could the maternal mortality in child-bed at once be lowered, but a lowering of the early infant mortality would inevitably follow. The subject is one which calls for careful study and consideration at the hands of a medical men and women, particularly at the present time when the lives of mothers and of their children are so important.

OPHTHALMOLOGY.

There is little to record of progress in ophthalmology except in connexion with the problems associated with the war. The injuries met with are of all degrees of severity. In the worst cases the eye is irretrievably damaged and there is much destruction of lids and neighbouring parts. These injuries leave scope for much ingenuity in plastic operations. Often the lids are so much damaged that the best procedure is to remove the conjunctiva and cover the whole surface with skin. The wounds are often septic, and excision of the eye in these cases is accompanied with risk of meningitis. The surgeons at the front are therefore often eviscerating these eyes, leaving a collar of sclerotic around the optic nerve. These cases usually require further operation subsequently, as the cup of sclerotic becomes filled with granulation tissue which keeps up a continuous discharge. Moreover, the sclerotic is badly supplied with blood-vessels and necroses; hence it is necessary to dissect it out. Wounded lids and sockets often have dense bands which prevent the wearing of an artificial eye. Contracted sockets have always been very difficult to deal with, but we may hope for some improvement in methods as the result of so extensive an experience.

During the war injuries to the eyes have resulted in an extraordinary variety of lesions in the fundus oculi. Hæmorrhages, ruptured choroids, retinitis proliferans, pigmentation, and so on, are very common, and present many interesting features. There is a wealth of material for painstaking investigation and record, but, unfortunately, no one has leisure for such peaceful pursuits.

Intraocular Foreign Bodies.

In every war-wounded eye there is the possibility of the presence of an intraocular foreign body. One of the base hospitals in France has a giant magnet, and all the cases passing through this hospital are put up to the magnet as a routine measure. Unfortunately, many of the foreign bodies are non-magnetic. It is therefore necessary in almost every case of wounded eye to have skiagrams taken, and extremely accurate localisation is necessary. This can only be effected by special apparatus, which has not always been available. For this and many other reasons it would be better if there were more concentration of the eye cases, and there is evidence that the authorities are adopting this view. During the past year the subject of foreign bodies in the eye has been discussed at the annual congress of the Ophthalmological Society of the United Kingdom, and the war aspects were duly borne in mind. Where one eye only is injured the surgeon's chief anxiety is often the danger of sympathetic ophthalmitis in the other eye. The treatment, however, is based on exactly the same principles as in civil practice, and it is a gratifying sign of efficient supervision that few, if any, cases of sympathetic ophthalmitis have yet occurred.

Nervous Affections.

Apart from actual lesions of the eyes themselves the nervous affections of the visual apparatus have attracted most attention. The amblyopia associated so frequently with so-called "shell shock" has been discussed by ophthalmologists, neurologists, and psychologists. It may be recalled that the Russo-Japanese War gave rise to many cases of wound of the occipital lobes of the brain, and that these formed the subject of an admirable monograph by a Japanese author. Similar cases have been studied in this war by GORDON HOLMES and W. T. LISTER, more especially with reference to the cortical representation of the macula. Their paper before the Section of Ophthalmology of the

Royal Society of Medicine may be profitably read in conjunction with an exhaustive pathological research by J. SHAW BOLTON and WILLIAM ROBINSON in a recent number of *Brain*. Still more recently a very striking clinical investigation of similar cases by Captain RIDDOCK has been discussed at the Section of Neurology, the interesting point being that a dissociation of movement may persist in the otherwise hemianopic field.

The general mass of ophthalmic literature has been much reduced owing to the war. It has already been announced in THE LANCET that the three British journals—the *Royal London Ophthalmic Hospital Reports*, the *Ophthalmic Review*, and the *Ophthalmoscope*—are to be merged in a single representative journal to be called the *British Journal of Ophthalmology*, the first number of which will appear in January next.

NEUROLOGY.

The neurologist may be forgiven if he finds legitimate cause for satisfaction in the impetus which the war has given to the study of neurology, and the old-time neglect of it seems the more inexplicable. So large is the output of articles dealing with the neurology of the war that any attempt at summarisation must appear almost hopeless. To keep abreast of these contributions is an arduous task, while, unfortunately, many of them do not lend themselves to easy abstracting. The following paragraphs, therefore, form rather a guide to some papers and books than any discussion of their contents, and no attempt is made to allude to numerous valuable contributions to English literature, as these must, in many cases, have already come under the notice of our readers.

Lesions of the Peripheral Nerves.

In "Les Blessures des Nerfs," by Dr. J. TINEL, in charge of one of the French military neurological centres, a book of some 300 pages and an equal number of illustrations published by Masson et Cie, will be found an admirable compendium on the subject of injuries to the peripheral nerves. Its clinical side leaves nothing to be desired. Every aspect of such lesions, every factor bearing on exact diagnosis and on the desirability or otherwise of surgical interference is discussed with the lucidity of experience. Nothing has been more striking in war neurology than the overwhelming number of cases of peripheral nerve injury, and in this volume their classification and differentiation are dealt with in a highly practical way. Dr. G. DENY, of the Salpêtrière, contributes a general review of the subject to *L'Encéphale* for December, 1915. In this paper the different syndromes of interruption, compression, and irritation respectively are fully described and explained. The writer gives no fewer than 40 references to articles on peripheral nerve lesions in war (all French). In the issues of the *Revue Neurologique* for the first six months of 1916 there are some 30 original communications on peripheral nerve injuries, and at least as many more abstracts of similar papers from other journals. Reference may be allowed to two papers merely, one by MEIGE and BENISTY in the *Presse Médicale* for April 6th, 1916, and the other by LERICHE in the same journal for April 20th, 1916. The first of these contains a valuable study of the little understood vaso-motor, trophic, caloric, secretory, and painful phenomena often accompanying peripheral nerve lesions. The writers show the importance of the implication of vascular and sympathetic nervous system tissues in this connexion. LERICHE deals with the treatment of causalgia in certain cases, and attributes it to involvement of periarterial nervous plexuses. For treatment he suggests stripping periarterial cellular sheaths for some 8 or 10 centimetres at the level of the lesion.

Lesions of the Spinal Cord.

At the Medical Society of London the subject of spinal cord lesions was fully discussed.[1] Captain JAMES COLLIER introduced the discussion with a valuable paper, in which he described: (1) Direct lesions; (2) indirect lesions from indriving of bone, impact, and concussion; (3) secondary lesions from hæmorrhage and œdema; and (4) remote lesions, due to sudden raising of intraspinal pressure caused by passage of missile or by general concussion effect. CLAUDE and PORAK[2] have made a useful contribution to the study of gunshot wounds of the cauda equina. They distinguish three groups of cases: (1) Prolonged paralysis of both lower extremities; (2) flaccid paraplegia of both legs, with subsequent unilateral improvement; and (3) unilateral paralysis from the commencement. They remark that on the whole the prognosis is not unfavourable, and that sometimes a striking degree of improvement may take place even in cases that have appeared hopeless. A considerable number of papers have been devoted to a consideration of spinal cord reflexes after complete and incomplete lesions, and to the important question of "spinal automatisms" (WEISENBURG, JARKOWSKI, ASTWAZATUROF, GUILLAIN and BARRÉ, MARIE and FOIX).

Lesions of the Brain.

At a joint meeting of the Société Nationale de Chirurgie and the Société Neurologique of Paris (May, 1916) a very long and detailed discussion took place on the whole question of intracranial injuries of war. The topics of surgical interference, secondary conditions, such as hernia cerebri, abscess, meningitis, and epilepsy, the duration of the symptoms, and cranioplasty, even the question of the removal of such cases from the field and the value of the helmet, were discussed in all their bearings. The reader is referred to the *Revue Neurologique* of June, 1916, for the record of the proceedings. At a previous meeting of the Société de Neurologie an illuminating debate on the general procedure to adopt in cerebral injuries took place. Reference must also be made to the paper by M. BABINSKI on the exact nature of so-called functional disturbances from gunshot wounds, shock, emotion, &c. This is a paper of peculiar interest and value to the neurologist.[3]

Neuroses.

This year's Lettsomian lectures[4] were delivered by Major F. W. MOTT and devoted to a consideration of the effects of high explosives upon the central nervous system. They deserve careful study by all interested in the subject. Major R. G. ROWS has written on the mental conditions following strain and nerve shock. Two Thèses de Paris have been devoted to the same topic (VACHET, BOUCHEROT). In the Italian *Rivista di Patologia* (1916) is an important paper by BUSCAINO and COPPOLA on mental disturbances in war time. It is based on a study of cases among soldiers, civilians, refugees, and hostages, and it contains a review of the literature and a lengthy bibliography.

ELECTROTHERAPEUTICS AND RADIOLOGY.

One of the most important and valuable measures adopted during the present war is the establishment of orthopædic hospitals and convalescent camps, where the after-effects of the injuries and diseases inherent to warfare are dealt with and the work of the ordinary hospitals completed. The carrying out of the scheme has involved the employment of electrical methods of treatment to an extent hitherto unknown, and with results that must afford the utmost satisfaction to those interested. Stiff joints, injured nerves, and paralysed muscles are now dealt with in the most thorough manner and under expert medical direction. Ordinary continuous and interrupted currents, diathermy, ionisation, static electricity are employed, either alone or more commonly in association with radiant heat, massage, or the more modern *eau courante* or whirlpool bath. This latter device seems to have some good properties, but it is too soon to estimate its value with any accuracy. Owing to the precautions taken cases of "trench foot" are not nearly so common as in the early months of the war, but a certain number are unavoidable, and for the stagnant state of the circulation left by this and kindred conditions the local application of high-frequency currents is favoured by some, while others pin their faith to static electricity, which appears to be growing in favour. It cannot be said that the past year has evolved anything that is a radical departure from known methods, but owing to the extensive employment of electricity and the large numbers of keen workers engaged there has been a great improvement in methods of application and technique as a visit to any one of these institutions will amply demonstrate.

[1] THE LANCET, 1916, i., 677.

[2] L'Encéphale, December, 1915.

[3] Revue Neurologique, April–May, 1916.

[4] THE LANCET, 1916, i., 331, 441, 545.

Radiology.

In the field of radiology also there is nothing very new to report. There has been a great drop in the number of new methods brought forward for the localisation of foreign bodies, and workers have usually settled down to their favourite scheme, the simple one of triangulation finding the most favour. The therapeutic application of the X rays is steadily advancing, and with the use of "hard" tubes and thicker filters better results are being obtained. Indeed, where the two are equally usable, in cases of malignant disease at least, there is reason to believe that the X rays are superior to radium. A more uniform irradiation is made possible without any risk of a local and more or less intense reaction, such as often occurs around the site of the radium applicator. Tubes of the Coolidge type are a great help in administering the therapeutic doses now demanded.

The most recent development as regards the use of the ultra-violet rays is the employment of electrodes of practically pure metallic tungsten in the arc lamp. The resultant radiation is very rich in ultra-violet rays and both regular and uniform. This is a great improvement on the lamps using electrodes of wolframite. Moreover, it appears that any simple form of arc lamp can be employed with excellent results; but, of course, precautions must be taken to shield the operator and patient against undesired exposure, as an "erythema dose" is very quickly produced by this rich fountain of ultra-violet radiation.

TROPICAL AND EXOTIC DISEASES.

As was the case last year, the investigation of the problems connected with tropical medicine and exotic diseases has suffered somewhat by the absence of many of our experts on active service. But notwithstanding this, progress continues to be made in many directions. A valuable and timely contribution to our general fund of knowledge was published in THE LANCET by Dr. F. G. CLEMOW, formerly British Delegate on the Constantinople International Board of Health. This series of articles described the Shiah Pilgrimage and the Sanitary Defences of Mesopotamia and the Turco-Persian Frontier, a subject of importance at the present moment, when plague, cholera, and other diseases are threatening in that region.

Dysentery.

Dysentery and other protozoal infections of the intestines have demanded a share of attention during the year owing to the invaliding and mortality which they have caused among our troops, especially among those in the Near East and Mesopotamia. Many papers on the subject have been published, and among these we may mention, in addition to those already noted (1) Intestinal Disorders Arising from Protozoal Infections, by Captain B. R. G. RUSSELL, R.A.M.C.; (2) *Lamblia Intestinalis* Infections from Gallipoli, by Lieutenant A. M. KENNEDY, R.A.M.C., and Lieutenant D. D. ROSEWARNE, R.A.M.C.; (3) The Nature and Distribution of the Parasites observed in the Stools of 1305 Dysenteric Patients, by Dr. H. B. FANTHAM; and (4) An Enumerative Study of the Cysts of *Giardia* (*Lamblia*) *Intestinalis* in Human Fæces, by Dr. ANNIE PORTER.

Kala-azar.

Sir LEONARD ROGERS, I.M.S., to whose efforts we owe largely the adoption of the modern treatment of dysentery by emetine, as well as the successful treatment of cholera by the hypertonic and permanganate method, has recently directed his untiring energies to the treatment of kala-azar, "the black death," a disease formerly regarded in India as inevitably fatal, and, in conjunction with Captain N. H. HUME, I.M.S., he has been treating such cases in hospital at Calcutta by intravenous injections of tartar emetic with gratifying success. Lieutenant-Colonel J. W. CORNWALL and Assistant Surgeon H. M. LA FRENAIS, I.M.S., have been studying experimentally the alleged association of the bug with the transmission of kala-azar to man. They have, however, found little to support this view so far, though further investigations are proceeding. Attention has recently been drawn by Captain GORDON R. WARD, R.A.M.C., to the possible danger of kala-azar being brought to this country from Malta by returning soldiers, and he quotes two instances of the disease in British soldiers who had never been further east than Malta.

Malaria.

Malaria, the most important of all tropical diseases, has been making its presence felt in some of the war-zones, causing mortality and invalidity among our Expeditionary Forces, particularly among the troops, both French and English, operating in the Valley of the Vardar, north of Salonica. In this unhealthy region many soldiers contracted malaria in spite of a daily prophylactic dose of 5 grains of quinine. The question of the value of quinine prophylaxis came lately under discussion at a meeting of the Society of Tropical Medicine and Hygiene, at which Dr. ANGUS MACDONALD, of Kingston, Jamaica, read a paper on the Position of Malaria in Sanitary Administration. In this he maintained that continuous drugging with quinine might prevent attacks of malaria in anopheline countries, but statistics were still lacking to demonstrate the extent to which the use of this drug prevents the occurrence of the disease. Surgeon-General Sir DAVID BRUCE at this meeting also expressed, from personal experience, some scepticism in regard to quinine as a prophylactic against malaria, adding that he wished that the matter could be "settled once for all by good evidence."

Ankylostomiasis.

The campaign against ankylostomiasis is still being successfully carried on in various parts of the world, including the West Indies and other British colonies, by the International Health Commission, an offshoot of the Rockefeller Foundation which supplies the money for the prosecution of this most useful campaign.

Trypanosomiasis.

Mr. G. D. MAYNARD, clinician and statistician to the South African Institute for Medical Research, has published a pamphlet on the trypanosomes of sleeping sickness, in which he freely criticised the views of the Sleeping Sickness Commission respecting the alleged identity of *T. brucei* with the other trypanosomes causing sleeping sickness in Nyasaland; he deprecated the wholesale destruction of big game in Africa, his opinion being that the human carrier is of much greater importance in the diffusion of sleeping sickness than wild animals.

Cholera in the Far East.

There are some indications that cholera is assuming more active characters in the Far East, and it is therefore possible that in the coming summer it may under suitable conditions, as in the past, sweep with a fresh virulence from east to west across Asia into Europe. During the autumn there was a considerable epidemic in Japan and Korea and in Indo-China, particularly in Annam and Tonkin, cholera was very prevalent during most of the year. The infection was conveyed in one instance from Annam to Colombo, 55 cases occurring in connexion with the vessel; it was conveyed to Suez in another ship chartered by the French Government for the transport of Annamese labourers from Saigon to France, *viâ* Marseilles, to work behind the trenches. In the case of this vessel altogether 136 cases occurred on board or at the quarantine station at Suez; the danger from it was regarded as so great that the vessel and its passengers were sent back to Saigon. The presence of cholera carriers was discovered on this ship among the passengers who were apparently in good health. Cholera was also present in the Dutch East Indies, especially in Java, during the year. In India, up to the end of July, about 184,000 deaths were recorded from cholera, Bengal and the Province of Bihar and Orissa being the chief sufferers. There were several outbreaks in Persia, Siam, and the Straits Settlements. In the Philippine Islands about 4000 persons were attacked by cholera during 1916.

Cholera in the Near East.

Cholera during the summer and autumn was widely epidemic in Turkey, and Constantinople, Smyrna, Samsun, Jaffa, Tripoli de Syria and Damascus were among the towns invaded by the disease. At the beginning of the year cholera appeared among the Serbian soldiers and refugees who had been disembarked at Corfu, and the Austrian prisoners brought by the Serbians to Albanian ports for conveyance to an island near Sardinia suffered considerably from the disease, as did also Serbian refugees landed at Marseilles; also those landed at Biserta, Tunis, and other North African ports. Recent reports mention the appearance of cholera in Rumania, at Galatz, Braila, and Toulcha (or Tuldja); also in some parts of Greece, including Moschopolis and Koritza in

Northern Epirus. Early in the year cholera was present in Austria, Hungary, Croatia, and Bosnia. In the Caucasus the disease was prevalent at Tiflis and other places during the autumn. A recent report mentions the appearance of cholera at the port of Jibutil, or Obock, in French Somaliland.

Yellow Fever.

The fourth and final report of the Yellow Fever (West Africa) Commission was issued last summer. It confirmed the opinion that this malady was endemic on the West Coast of Africa, and that probably the continuous presence of the disease was maintained by the existence of endemic foci rather than by its almost universal prevalence amongst the native population. There is no evidence that yellow fever has been brought to West Africa in recent years from any other country. Up to the present the nature of the virus remains unknown. In the third report the Commission finally rejected the claims advanced by Dr. H. SEIDELIN that the bodies discovered by him, and which he named the *Paraplasma flavigenum*, were the true parasites of yellow fever. Vigorous prosecution of anti-mosquito measures was strongly urged by the Commissioners.

Plague in Europe.

Some alarm was aroused in England towards the end of last autumn by the almost simultaneous appearance of cases of plague at three of our principal ports—namely, Liverpool, Bristol, and Hull, all of which hold a high reputation for the excellence of their sanitary administration. None of the groups of cases were landed from a ship, but all occurred among the population on shore. It was therefore a disturbing thought that if plague had found an entrance at three well-administered ports, it would be easy for it to find a footing in ports less well administered. Fortunately, the measures at once taken by the local authorities were successful, and some three months have now passed without any new case being reported. In this connexion the existence of so many foci of the disease abroad shows the amount of danger to which this country is exposed through its shipping and commerce. In Greece cases of plague occurred at Athens and the Piræus in January, and later in three islands—Syra, Chios, and Mitylene. In September plague was present at Volo, a port in Thessaly. It has been stated also that two cases of plague occurred at Salonica during the year.

Plague in Asia.

In India plague still continues its ravages; over 184,000 deaths from it were recorded up to October, the United Provinces and Bombay Presidency being at present the worst-affected areas. Ceylon has not yet got rid of the disease, for more than 240 cases were reported up to September at Colombo. In the Dutch East Indies the prevalence of plague also continues, and in Indo-China and Siam outbreaks have been observed during the year. Minor prevalences have also been recorded in the Straits Settlements, Japan, China, and the island of Formosa; also in Persia, at the port of Mohammerah, near the Turkish frontier.

Plague in Africa.

In Egypt some 1700 cases were notified up to the middle of November, and in Tripolitania an outbreak occurred among the Italian troops near the town of Tripoli. At Rabat, a port on the coast of Morocco, some cases were reported. In the Union of South Africa early in the year plague appeared in the Orange Free State in the districts of Hoopstadt and Winburg. Among the Europeans who fell victims to the disease was Dr. PAUL A. GILLESPIE, a medical practitioner of Winburg, who died on March 24th. In October another outbreak occurred in Cape Colony in the Uitenhage district, 25 miles north-west of Port Elizabeth, among the native population. In Uganda plague appeared in October at Kampula, and in the East Africa Protectorate at Nairobi, where 45 fatal cases resulted, two being Europeans. Plague has for some years been prevalent in Mauritius, but it now appears to be subsiding, for during the year only five cases came under official observation.

Plague in the Western Hemisphere.

Brazil had little reported plague during 1916, only a few cases being notified at the ports of Bahia and Pernambuco. In the Argentine plague was prevalent in the province of Cordoba early in the year, about 50 cases being observed; and in the autumn the disease reappeared at Villa Urquiza, not far from Buenos Aires; but to what extent was not known, as the local authorities refused information. Plague was officially reported in Chili at Antofagasta, Tacna and Mejillones during the spring, and was stated in June to be spreading along the coast. The disease was reported about midsummer to be increasing in Peru, especially at the port of Paita, and at least seven departments of the Republic admitted a prevalence of plague within their borders. One of the chief foci of plague in South America is the Republic of Ecuador, the capital of which is Guayaquil, known among American skippers as "the pest-hole of the Pacific," where about 640 cases were reported up to October. Plague also occurred at other places in the interior of Ecuador. There were no human cases of plague notified in the United States during 1916, but infected rats continued to be discovered from time to time at the port of New Orleans. Some plague-infected ground-squirrels were also found in several counties in California from March up to July.

PUBLIC HEALTH.

Since the outbreak of war all branches of public health work have been carried on in circumstances of peculiar difficulty owing to the depletion of sanitary staffs occasioned by the large number of medical men, sanitary inspectors, and public health clerks, ordinarily employed by local sanitary authorities, who have gone on military service. The ever-increasing demand for medical men in the Army has made it far from easy to maintain an efficient public health service throughout the country during the year 1916. By combining appointments it has been possible to release from their civil duties a large number of medical officers of health, tuberculosis officers, and school medical officers for service in the Royal Army Medical Corps. In some instances a medical officer of health has undertaken duty in one or more districts in addition to his own; in others a county medical officer of health has consented to carry on district work during the absence of the local officer, while lady doctors and general practitioners have filled many gaps created by the exigencies of war. We learn from the Forty-fifth Annual Report of the Local Government Board that, at the time when the report was issued, about 250 medical men holding whole-time posts under local sanitary authorities were on service with His Majesty's forces, and probably the number has increased since then. It is, of course, the paramount duty of all persons in this grave national crisis to do what lies within their power to assist in winning the war, and an adequate supply of medical men for the Army is a matter of cardinal importance; local authorities and the public generally realise that the absence of so many highly trained sanitary officers from their civil duties is a serious matter, although the present depleted condition of the public health service has led to no serious increase in the incidence of infectious disease since the outbreak of war. The fact reflects credit on the national sanitary administration, but affords no certain guarantee that this state of affairs will continue.

Acute Infectious Diseases in the Civil Population.

In the spring of 1916 small outbreaks of small-pox occurred in South Wales, Lancashire, and in other parts of the country. Energetic measures were taken by local authorities to limit these outbreaks, and by the end of June the prevalence of the disease came practically to an end. During August and September plague appeared almost simultaneously at Liverpool, Bristol, and Hull, but the efficiency of the sanitary administration in these places prevented any general spread. We have referred to this incidence of plague in England in another column, as well as to the liability which now exists of importation of infectious diseases from the war zones in Europe and the Near East. The diseases most likely to be thus introduced are typhus fever and small-pox, but, fortunately, they have not so far given rise to trouble. A considerable number of our soldiers suffering from dysentery and from typhoid infections have from time to time been sent home for treatment in this country. The arrangements made by the military in coöperation with the civil authorities have, however, been successful in preventing any serious spread of these maladies to the home population. The extensive prevalence of cholera in Turkey and the Near East gives rise to risk of its introduction into Britain. In view of the circumstances outlined above, we understand that a sanitary survey of the ports of England and Wales

is being carried out by the central health authority. A similar survey was undertaken in 1892–93 when cholera threatened to gain a footing in this country, and two subsequent surveys were made in 1900 and 1907 respectively on account of the prevalence of plague. These surveys gave a great stimulus to improvement in the port sanitary administration of the districts visited, and another survey at the present time appears to be peculiarly opportune.

When in August last epidemic poliomyelitis assumed alarming proportions in New York and in other parts of the United States of America fear was expressed that the infection might be brought to this country and give rise to outbreaks here. Such anticipations have not, however, been realised, for we understand that the incidence of the disease, which may be regarded as endemic in Britain, has been only slightly greater during 1916 than in the previous year. There was, however, an epidemic of the malady in the city of Aberdeen, where the disease has been prevalent since July, and some 79 cases have been notified. In Ireland also cases have occurred during the summer and autumn, among other places, in the union of Castlerea, in Claremorris and Carrickmacross, while there was a small outbreak in county Cavan.

With regard to cerebro-spinal fever, though still widely prevalent, there have been fewer cases this year among the civil community than there were in 1915. In certain districts scarlet fever continued to have a high rate of prevalence, but the type of the disease was mild for the most part. There was also considerable prevalence of diphtheria in a number of areas.

Health of the Home Forces.

We understand that the health of the troops stationed in or undergoing training in this country during the year has, upon the whole, been excellent. The military authorities are to be congratulated on the manner in which they have dealt with cerebro-spinal fever which last year threatened to become a serious scourge in the Army. Much useful work has been done in the detection of cerebro-spinal fever "carriers" by means of bacteriological investigation, and considerable advance has been made in our knowledge of appropriate methods of treating these "carriers" so as to render them free from danger to themselves as well as to those with whom they associate. Owing to the exigencies of military service the problem of preventing the spread of this disease is in some respects more difficult among troops than among the civilian population, the men being gathered together under conditions peculiarly liable to facilitate the conveyance of infection from person to person. It is satisfactory to know that during 1916 the incidence of cerebro-spinal fever among the home forces has been less than last year. The number of cases of measles and German measles has been, perhaps, a little surprising, as these affections are generally regarded as ailments of childhood rather than of adult life, but it is probable that a large percentage of the soldiers attacked may have come from rural districts where there has been little prevalence of these diseases. Scabies has given rise to a good deal of trouble, but has yielded to the curative and preventive methods employed.

The Control of Venereal Diseases.

Perhaps the most important event of the year in the public health world was the issue by the Local Government Board of the Public Health (Venereal Diseases) Regulations, 1916, which provide that the council of every county and county borough (1) shall, subject to the approval of the Local Government Board, make arrangements for enabling any medical practitioner practising in the area of the council to obtain, at the cost of the council, a scientific report on any material which the practitioner may submit from a patient suspected to be suffering from venereal disease; and (2) shall prepare and submit to the Local Government Board a scheme (*a*) for the treatment at and in hospitals or other institutions of persons suffering from venereal disease, and (*b*) for supplying medical practitioners with salvarsan or its substitutes. 75 per cent. of the cost incurred by local authorities in carrying out approved schemes is to be repaid from Imperial funds. A memorandum by the medical officer of the Local Government Board on the organisation of measures against venereal diseases, on the lines laid down by the Royal Commission, was also issued.

The recommendations of the Commission have not been universally accepted without criticism. In certain quarters, for example, it is contended that compulsory notification of venereal diseases is essential to the success of measures directed toward their prevention, while in others such a course is strongly deprecated. The opinion has also been expressed that the treatment of these diseases by druggists and persons not qualified to practise medicine should have been made illegal, and, in view of the extensive prevalence of this most undesirable custom, drastic action for its repression seems to be called for. Of course, the whole problem of the prevention of venereal diseases is one of much difficulty, but the work contemplated in connexion with the Public Health (Venereal Diseases) Regulations, though, perhaps, not as complete or entirely satisfactory in character as some could have wished, inaugurates a new era; the Government has at last awakened to the importance of the subject and is determined to do something toward mitigating an evil which has been far too long neglected. Considerable progress has already been made in the preparation of schemes, and nothing but good can result from the efforts of the general hospitals, the pathological laboratories, and the public health service working in unison.

Some Points in Public Health Administration.

With the view of preventing men suffering from tuberculosis being admitted into the Army a circular letter was issued by the Local Government Board on May 6th, 1916, urging local authorities to allow their tuberculosis officers to assist the military authorities in the examination of recruits and in such other ways as may be desired. Regulations were also issued on May 13th, 1916, requiring every medical officer of health, during the continuation of the war, to send to the Army Council periodically lists containing the names and other specified particulars of all male persons of certain ages who have been or may be notified as suffering from tuberculosis. The regulations provide that all information received in pursuance thereof shall be regarded by every person who may have access thereto as confidential.

In a circular letter dated Sept. 23rd the Local Government Board draws the attention of county councils to the fact that the duties of health visitor, inspector of midwives, tuberculosis visitor, and sometimes also those of school nurse and mental deficiency visitor, may often be carried out by one individual officer, thus economising time and travelling expenses and securing uniform medical supervision. Work in connexion with child-welfare and maternity appears to be making satisfactory progress throughout the country. In Part III. of the Forty-fifth Annual Report of the Local Government Board it is stated that nearly 400 whole-time and over 600 part-time health visitors have now been appointed by local authorities, while over 300 municipal centres and more than 350 voluntary centres have been established.

ANÆSTHETICS.

Dr. CRILE'S elaborate theories on the nature of anæsthesia have been expounded in various contributions to medical journals. His experiments are not unquestioned,[1] nor has he met the two controverting facts that while, on the one hand, alkalinity does not remove anæsthesia, acidosis commonly occurs without provoking it. Coma is not synonymous with anæsthesia. Still, all Dr. CRILE'S work provokes thought. Geheimrath Professor BARNHARD KROENIG,[2] working with Dr. P. W. SIEGEL (Freiburg), asserts that CRILE'S anoci-association—i.e., (1) blocking all entrant stimuli; (2) suppressing post-operative pain—can be obtained by paravertebral anæsthesia with hypodermic injections of scopolamine and narcophine. He also dusts the traumatised surfaces with a powder called anæsthesin. His plan is to seek for and inject the intercostal nerves according to the area of operation. He regards the viscera as insensitive. Gynæcological—i.e., pelvic—operations he admits are less easily dealt with by his method The after-pain appears not to have been abolished in his cases. Dr. BRANSFORD LEWIS[3] and Dr. L. BARTELS extol sacral analgesia in genito-urinary surgery. The latter appears to find access to the canal easy in even old subjects, but this is not

[1] THE LANCET, 1916, i., 578.
[2] Surg., Gyn., and Obstet., November.
[3] Ibid, p. 262.

the usual experience. He warns against wounding veins and piercing the membranes, accidents not always easy to avoid. Although his cases are few, he claims that upon the whole the method is valuable for prostatectomies, bladder, urethral, and even rectal operations. Dr. C. L. HOAG and Dr. I. WEBSTER and Dr. W. LYND have met with success in applying "anoci-association" to parturition. They claim that perineal injections lessen rigidity, and scopolamine injected during the first stage assists without being deleterious to mother or child.

Dr. R. W. KING[4] reports 100 cases of labour in which novocaine and adrenalin were used. He regards superficial after-sloughing of the labia as unimportant. THE LANCET[5] considers as a grave danger the recent propaganda in favour of GAUSS's Dämmerschlaf method (twilight sleep in labour) in the lay as well as the professional press. It sums up the evidence and considers that without strict precautions the method is fraught with serious danger. In our columns and elsewhere many papers have appeared upon the use of spinal analgesia for operations involving the Trendelenburg position.[6] There appears, however, to be some disagreement in the technique employed—e.g., some surgeons extol the use of light, others that of heavy fluids (Barker's) for injection. Some writers advocate the dorso-lumbar site for puncture. Dr. KNIGHT[7] gives statistics of fatalities under spinal analgesia. These evince a striking disparity: Strauss, 1 in 3500; McCardie (collected from various sources), 1 in 826; König, 1 in 200; Thomaschewsky, 1 in 17,847. The employment of a mixed method, spinal analgesia and general anæsthesia, has been rather widely adopted for operations involving great shock, e.g., Wertheim's, the abdomino-perineal, removal of rectal carcinoma. Many complicate the procedure by also injecting scopolamine morphine and infusing saline, so that it is impossible to estimate to which factor the good results claimed are due. A paper by Dr. J. F. BALDWIN[8] produces striking statistics of fatalities occurring under nitrous oxide and oxygen used in major surgery. Although extremely safe in brief administration he regards this anæsthetic as very dangerous in prolonged cases, although he admits its value in skilled hands within a limited field. Dr. R. C. CRAWFORD[9] points out that if the air passages are kept patent by a respiratory tube danger is prevented.

Much useful work has been done in the Section of Anæsthetics of the Royal Society of Medicine during the year. *Inter alia*, the subjects of the value of warmed anæsthetic vapours, the composition of the vapour under an (?) "open ether" mask, and the treatment of circulatory failure by heart massage, were discussed. Similar valuable investigations have been carried out by the American Society of Anæsthetists, and this body has issued a useful year-book.

THE ROYAL NAVAL, ARMY, AND INDIAN MEDICAL SERVICES.

Royal Naval Medical Service.

In spite of the incessant and strenuous active service of the Royal Navy during the past year a considerable amount of scientific investigation has been accomplished by its medical officers. Two especially valuable researches have been those of Staff-Surgeon HARDY WELLS on aeroplane injuries and diseases, an entirely new field for medical and surgical investigation, and an inquiry into the spread of trematode diseases, especially with reference to *Schistosoma japonicum* in the Far East, by Staff-Surgeon E. L. ATKINSON.

No changes of importance have occurred in the higher personnel of the Naval Medical Department nor in the conditions of service. Never in the history of our country has the Royal Navy occupied a higher place in the regard and affections of the nation, which is well aware of its obligations to the service, while to the medical staff is due its full share of this debt of gratitude.

The list of losses by death is not a long one, apart from casualties occurring on active service. Fleet-Surgeon JAMES MOWAT, after 20 years' service in the Royal Navy, retired, but on the outbreak of war returned to duty, and was appointed to the *Hermes;* she was sunk in 1914, and Fleet-Surgeon MOWAT'S work in attending to the wounded was mentioned in despatches. He was invalided for shock, caused by the disaster, but last year joined the Royal Army Medical Corps as Major, and was on his way to the Dardanelles in the *Royal Edward* when she was sunk.

Army Medical Service.

The opportunities for advancement of scientific research have been restricted in many directions, but the large field of observation afforded by active service operations on an immense scale has yielded very considerable results that in due time will be placed on record. Apart from this, some valuable researches on the mode of spread of amœbic dysentery and the life-history of pathogenic amœbæ and other protozoa have been carried out and published by Captain DAVID THOMSON, R.A.M.C., and Captain GORDON THOMSON, R.A.M.C., in Egypt, and on the cultural characters and differentiation of the typhoid coli group of organisms by Captain H. L. TIDY and Lieutenant I. P. S. DUNN, R.A.M.C., at the Army Medical College.

Owing to the unprecedented conditions arising from the war it was decided in the early part of 1915 to duplicate the office of Director-General, Sir ARTHUR SLOGGETT, the existing head of the medical service of the Army, becoming Director-General of the Expeditionary Force, while Sir ALFRED KEOGH, who had been Director-General up to 1910, and who was in 1915 acting as Chief Commissioner for the British Red Cross Society in France and Belgium, became Director-General of the Army Medical Service at home. Early in 1916 Surgeon-General Sir W. BABTIE, V.C., who had been Director of Medical Services in India, and subsequently in Egypt and the Mediterranean, was brought home to assist Sir A. KEOGH, especially in regard to the supervision of invaliding and questions connected with the medical care of the troops at home. The enormous increase of the strength of the Army and the multiplicity and urgency of the requirements as to accommodation, sanitation, and organisation rendered this innovation absolutely necessary. In October Surgeon-General T. J. O'DONNELL, C.B., was appointed Director of Medical Services in India.

For the rest, the work of the service is written in the history of the war.

Indian Medical Service.

An important step in the advancement of scientific research in India has been taken by the establishment of a hospital for tropical diseases in Calcutta, the foundation-stone of which was laid by Lord CARMICHAEL, Governor of Bengal, in February, 1916. There will be over 100 beds, with complete equipment for pathological research in connexion with the Calcutta School of Tropical Medicine. The first Director of the school is Sir LEONARD ROGERS, to whose energy and persistence its establishment is largely due.

Surgeon-General Sir C. P. LUKIS, K.C.S.I., Director-General, I.M.S., was appointed to act as Director of Medical Services in India (the officer formerly known as Principal Medical Officer, H.M. Forces in India) in April; and, resulting from this, Colonel H. HENDLEY, I.M.S., was appointed to act as Director-General, I.M.S. The control of the whole medical service, civil and military, is now vested in one officer, presumably for the duration of the war. An important step has been taken by the promulgation of an Order in Council by the Secretary of State for India that the President of the Medical Board at the India Office shall also be Medical Adviser to the Secretary of State. This will lead to a considerable increase in the responsibility and influence of the holder of the office, who at the present time is Sir R. HAVELOCK CHARLES.

The Indian service has sustained severe losses by death during the past year, though we mention specially two names only. Sir GEORGE SCOTT ROBERTSON, K.C.S.I., had an adventurous and varied career. He served in the Afghan War of 1879–80 and in the Hunza Nagar Expedition of 1891–92; he was sent on various political missions to the Indian frontier tribes, and in 1895 was besieged in Chitral, where he was severely wounded. He was subsequently political agent at Gilgit, and on retirement entered the House of Commons. Lieutenant-Colonel G. M. J. GILES, of the Bengal Service, served in the Zulu War, was Surgeon-Naturalist in the Indian Marine Service, and accompanied Sir WILLIAM LOCKHART in his exploration of the Pamirs. He was author of several works on tropical medicine and climatology; at the beginning of the war he joined the Canadian Army Medical Corps.

[4] Surg., Gyn., and Obstet., November, p. 615.
[5] THE LANCET, 1916, ii., 609.
[6] See THE LANCET, 1916, i., 1169, 1277; ii., 78, 645. Also paper by John Morley, Oct. 21st, Surg., Gyn., and Obstet., i., 955, et passim.
[7] Amer. J. of Obstet. and Dis. of Women and Children, June.
[8] Medical Record, July 29th; see also THE LANCET, 1916, ii., 566.
[9] Amer. Med. Assn., i., 799.

DENTAL SURGERY.

During the past year the attention of the dental profession has been mainly directed to problems arising out of the war. The position of those liable for military service has been one of anxiety. Those possessing medical qualifications have been able to obtain commissions in the Royal Army Medical Corps, but those only possessing the dental licence have not always been able to obtain commissions as dental lieutenants, with the result that many have had to pass into the combatant ranks—a condition of affairs which serves as a conspicuous example of the great waste of skilled labour in the conduct of the war.

Gunshot Injuries of the Jaw.

During the year fresh centres for the treatment of gunshot injuries of the jaw have been formed with apparently most satisfactory results. The treatment of these injuries has excited keen interest and two important gatherings have been held in this country to discuss the problems involved in treatment. The first, in the early part of the year, was a special meeting of the Odontological Section of the Royal Society of Medicine; the second, and the more important, was held in the summer under the control of the British Dental Association. The various dental journals have also contained numerous papers on the treatment of the fractured jaw. In the majority of the papers stress has been laid upon the necessity of reducing the fragments until the teeth are in correct occlusion, the authors apparently being satisfied in many cases with fibrous union. Various types of mechanical apparatus have been described with a view of attaining ideal occlusion. Of these papers perhaps the most complete was that published by Dr. O. RUBBRECHT, of Ghent,[1] who described the technique employed in nine cases and gave illustrations of the condition before and after treatment. Mr. C. H. BUBB has also published a paper on some technical details in treatment. He states that he is able to control the posterior fragment, even when edentulous, with an extension of soft rubber or gutta-percha to a fixed metal splint, but no record is given of cases treated. In a paper published in the April number of the *Journal of the Royal Army Medical Corps* Mr. J. F. COLYER drew attention to the advisability of obtaining osseous union whenever possible and pointed out that the malocclusion of the teeth which follows in some cases can easily be remedied by properly constructed dentures. In his paper he showed the great importance of removing the teeth in connexion with the fractured area, and supported his contention by a record of cases. He also advocated that the teeth in the region of the fracture should be removed as a routine practice. An interesting series of papers on patients treated at the American Ambulance in Paris has been published in various issues of the *Dental Cosmos*.

Mr. J. LEWIN PAYNE, in a paper read at the Royal Society of Medicine on Feb. 28th, suggested the following classification of injuries of the mandible founded upon the clinical aspects of the injuries: (1) Fractures of the mandible without displacement of the line of occlusion; (2) single fractures of the mandible with lateral displacement; (3) single fractures of the mandible with vertical displacement; (4) two or more fractures of the mandible with loss of substance; (5) gunshot wounds of the maxillæ; (6) fractures involving loss of the anterior portion of the mandible, the maxillæ, or of the whole of one side, together with the soft tissue adjacent.

In the *British Dental Journal* of Oct. 2nd Dr. V. H. KAZANJIAN published a valuable paper on the immediate treatment of gunshot fracture of the jaws. The paper was carefully thought out and well illustrated.

FORENSIC MEDICINE.

Throughout the year now drawing to its close the war has had the effect of checking legislation and litigation, and of preventing publicity being given to the reports of cases coming before the various courts of law, except where the subjects dealt with or the persons concerned are considered to be of general interest. A few typical cases in this category are mentioned below in some detail. On the other hand, the annual report of the Medical Defence Union, issued in the autumn, showed that its legal business with regard to the affairs of medical men has been largely increased owing to the war. The enforced absence of practitioners on war service has caused questions to arise with regard to many matters, such as the carrying out or varying of partnership deeds, the grouping of practices, and the employment of locum tenents. Medical men have also required advice in connexion with their service under the Crown, and when on active service abroad have had to consult the London and Counties Medical Protection Society or the Medical Defence Union as to the conduct of their affairs at home.

The Acts of Parliament which have affected the medical profession during 1916 have chiefly been those relating to medical service in the war, which can hardly be regarded as within the sphere of forensic medicine. The Midwives (Scotland) Act, passed in 1915, came into force on Jan. 1st, 1916; it follows the general principles of the Act relating to England but introduces an innovation in permitting a midwife to grant certificates when these are required in connexion with maternity benefit by Approved Societies or Insurance Committees. It provides also for the payment of medical men summoned by midwives to attend when special emergencies arise.

Curtailment of the Duties of Certifying Surgeons.

In accordance with a recommendation of the Committee on Retrenchment and Reform the Factory Department of the Home Office announced that on and after Sept. 4th it would not be necessary for the occupier of a factory to notify an accident to the certifying surgeon, under Section 8 of the Police, Factories, &c. (Miscellaneous Provisions), Act, 1916.

Heat-stroke as an Accident.

The Court of Appeal had before it the case of Pyper *v.* The Manchester Liners, Limited, in which the representatives of a stoker who had died of heat-stroke in the Red Sea claimed against the owners under the Workmen's Compensation Act. The court distinguished the case from that of Ismay, Imrie, and Co. *v.* Williamson, holding that the latter did not go so far as to make all cases of death by heat-stroke in ships' stokeholds "accidents," and that there was not in that case, or in those in which it had been followed, "a voluntary submission to a well-known normal cause affecting the greater part of the crew and known by the deceased to be likely to affect him."

The Property in a Prescription.

In the Honiton county court a firm of druggists was sued by a lady and her husband for whom they had made up a prescription given to the wife by her medical attendant. The medical practitioner had arranged with the druggists that they should not return his prescriptions to his patients. The county court judge held that no property in the document had passed to the plaintiffs, as the prescription had only been handed to them in order that they might convey it to the druggists instead of the medical man sending it to them himself. Judgment was accordingly given for the defendants.

Medical Practitioners' Fees.

A medical man recovered a sum of £18 for fees for attendance upon the members of the Juvenile Oddfellows' Society. The defence was that the fees in question were in respect of members whose subscriptions were in arrear, and that it was for the medical practitioner to ascertain whether his patient was entitled to attendance at the Society's expense. For the plaintiff it was contended that it was for the Society to inform him when subscriptions were in arrear, and that when he had made his agreement with it an arrangement had been entered into to disregard short periods of non-payment of subscriptions. His honour Judge GYE (since deceased) gave judgment for the medical man with costs on the higher scale. A claim for fees for medical attendance upon an insured patient was successfully made by a medical man at Liverpool, the defence being that as the patient was on his panel list of patients, and had been attended as such, no fee could be recovered. It was, however, given in evidence that the patient had been removed to a nursing home at a distance from the doctor's residence and that he had been specially requested by her husband to continue his attendance upon her. The county court judge held that it was unreasonable to think that visits at such a distance would be made without charge and that the medical man was entitled to recover for them.

Medical Men and Declarations for Passports.

Medical men are not infrequently approached with a view to their helping to obtain passports for persons with whom they are, at best, but slightly acquainted. Knowingly

[1] British Dental Journal, Oct. 16th.

to make a false declaration on such an occasion is a serious offence, and a medical man in London, who was acquitted upon a charge of signing such a declaration, only escaped conviction because having personally questioned the applicant for a passport he could hardly be said to have no personal knowledge of her. He had acted in perfect good faith at the request of a patient, but nevertheless the person for whom he accepted responsibility was afterwards sentenced to a long term of imprisonment under the Defence of the Realm Act.

Bogus Practitioners.

The absence of medical men from their practices through war service and the demand for medical practitioners to undertake civil and military duties have been taken advantage of in several instances by impostors. Among these H. J. HERRING, an unqualified person who several years ago was sentenced to five years' penal servitude for manslaughter committed when personating a medical man, was sentenced to four years' penal servitude at the Central Criminal Court for bigamy and for feloniously giving death certificates. He had personated a medical practitioner, Mr. E. K. HERRING, practising in New South Wales, and so obtained a post as locum tenens.

R. v. Burdee: Manslaughter by an Unqualified Person.

In the case of an unqualified person, who was sentenced to 12 months' imprisonment for the manslaughter of an elderly woman, to whom he had applied a so-called "cold water cure," Mr. Justice DARLING said that if a person, whether a qualified practitioner or not, professed to deal with the life or health of any person, he was bound to have competent skill to perform the task. The convict had held himself out as qualified to perform certain work, and he was bound to treat his patients with care and attention.

CHEMISTRY.

The war has set back pure science for a while in this country, but it has given a very decided and welcome stimulus to the application of scientific knowledge to pressing practical affairs. The scientific staffs at our universities and schools, hitherto engaged on academic work, have, to a large extent, been transferred to work of immediate national importance, and in consequence there is little to report in regard to pure research. Many interesting theoretical questions must perforce remain in abeyance, but the union of workshop and laboratory has been effected.

It is being very generally recognised that the future of scientific industry can only be secured by greater progress in organisation and by coöperation amongst the various manufacturers engaged in it, added to which there must be an important development in our system of technical education so as to increase the efficiency of labour and its scientific management. There must, however, be State assistance in this matter; chemistry in particular requires just the sort of support that is forthcoming at the present time in the prosecution of research aimed at replacing so many essential materials hitherto exclusively supplied by the enemy. Good progress here is being made in the dye industry and many colouring matters formerly made abroad have now been successfully prepared. Again, considerable advances have been reported in the manufacture of synthetics, and particularly of drugs and medicinal agents. The university and the factory have combined most usefully in this direction, while several well-known firms of manufacturing chemists have given determined and successful attention to the elaboration of fine products which were hitherto enemy monopolies. The following substances may be mentioned: the salicylates, including aspirin, the organic arsenic derivatives used in syphilis, phenacetin, homatropine, pilocarpine, glycerophosphates, benzamine derivatives, hexamine, adalin, benzidin, allantoin, beta-naphthol, formaldehyde, resorcin, hydroquinone, chloralamide, cotarnin, ichthyol, and eau de Cologne. To these may be added lanoline, which is now prepared in this country, the product satisfying the requirements of the British Pharmacopœia, and, in fact, reaching a higher standard than that laid down. There is thus nothing wrong with British effort and brain, and such achievements must receive our admiration, but these gains can only be retained by a national determination to support British enterprise. We were unprepared for the war; we must be prepared for the fierce economic struggle which is almost certain to succeed peace.

CONTRIBUTIONS FROM "THE LANCET" LABORATORY.

Throughout the year the total number of articles reported upon in our analytical columns was 37, involving just a hundred analytical determinations. In the monthly records of atmospheric pollution, published as soon as possible after the returns from the various stations have been received, the analyses made in THE LANCET laboratory for the Meteorological Office amounted to 130. In a special article entitled "Paraffinum Liquidum: the B.P. Standard Ignored," published in our issue of August 12th, it was pointed out that certain American oils were being imported into this country which were not refined to the extent that is desirable for medicinal purposes as an intestinal lubricant. While these, according to examination, did not exhibit fluorescence, colour, odour, or taste, they were below the wide limits laid down in the British Pharmacopœia in regard to specific gravity. Moreover, their viscosity was so low as to exclude them for the purpose of effectively lubricating the intestinal tract. In connexion with this inquiry 17 analytical determinations were made; the total number of laboratory analyses carried out during the year being 274. It may be added that the large increase in the cost of chemical reagents is seriously handicapping analytical operations in all laboratories, while in some cases the reagents are unobtainable.

HONOURS TO MEDICAL MEN.

The honours which have been bestowed upon members of the medical profession in connexion with the war will be found recorded in our columns from week to week during the year. We give below, however, a list of the New Year and Birthday Honours, though here also services in connexion with the war are included.

Among the newly created knights in the New Year list were Sir GEORGE A. BERRY, Sir THOMAS WRIGHT PARKINSON, and Sir MILSOM REES, C.V.O. A knighthood was also conferred upon Dr. RAI KAILASH CHANDRA BASU BAHADUR, of Calcutta. Surgeon-General Sir JAMES PORTER, R.N., and Temporary Surgeon-General Sir WILLIAM WATSON CHEYNE, R.N., were made K.C.M.G.'s; and Surgeon-General GUY C. JONES, Director of Medical Services to the Canadian Expeditionary Force, a C.M.G. To the Order of the Indian Empire were appointed as Companions Dr. JOHN ANDREW TURNER, Lieutenant-Colonel ROBERT CHARLES MACWATT, I.M.S., and Dr. SURESH PROSAD SARBADHIKARY, of Calcutta. In the Order of the Bath Fleet-Surgeon A. GASKELL, R.N., Surgeon-General W. H. NORMAN, R.N., Temporary Surgeon-General H. D. ROLLESTON, R.N., and Colonel W. W. WHITE, I.M.S., received Companionships; in the Royal Victorian Order Surgeon-General Sir ANTHONY A. BOWLBY was made a Knight Commander; and Staff-Surgeon ROBERT JOSEPH WILLAN, R.N., a Member.

The Birthday list included the names of Dr. CHRISTOPHER ADDISON, M.P., who was made a P.C. Those receiving knighthoods were Sir ARMAND MARC RUFFER, C.M.G., and Sir NESTOR TIRARD. Dr. FREDERICK MONTIZAMBERT, I.S.O., Director-General of Public Health of Canada, was awarded a C.M.G., and Fleet-Surgeon E. C. LOMAS R.N., D.S.O., Surgeon-General J. J. DENNIS, R.N., Colonel A. P. BLENKINSOP, Assistant Director-General, A.M.S., and Major P. S. LELEAN were made C.B.'s. Dr. NOEL BARDSWELL and Dr. FREDERICK HEWETT were made members of the Fourth Class of the Victorian Order. In the Indian List Major F. N. WHITE, Assistant Director-General, I.M.S., Lieutenant Colonel J. JACKSON, I.M.S., and Captain A. G. J. MACILWAINE, R.A.M.C., received the C.I.E., and Mr. H. M. NEWTON, Dr. R. G. ROBSON, and the Rev. PETER CULLEN, Brigade-Surgeon Lieutenant-Colonel, I.M.S. (retired), were awarded the Kaisar-i-Hind Gold Medal.

GENERAL MEDICAL COUNCIL.

Each of the two sessions of the General Medical Council during the year was short in duration, but at both important proceedings took place, mainly in connexion with the conditions produced by the war. The maintaining of the supply of practitioners sufficient for the needs of the country, while the calling up of junior medical students under successive systems of recruiting was going on, has produced a position which the Council was bound to consider an anxious one. In 1915 354 names in excess of the average of

the preceding five years were added to the Register, while there were also 500 medical students in excess of the same average; but Sir DONALD MACALISTER, the President of the Council, having the current figures before him, warned the Council that these became much less favourable as time went on. During 1916 depletion was found to be growing marked in the three- and four-year groups of students, as well as in the immediate entries. A census of medical students in the various schools of the United Kingdom was published in the proceedings of the December session, which showed a large increase of women students. At this meeting Sir DONALD MACALISTER reported to the Council that he had called the attention of the military authorities to the danger of further demands on medical students, with the result that the Army Council issued orders that registered medical students not classed as "fit for general service" are now relegated to the reserve, on condition that, while left to pursue their professional studies, they enrol themselves in an Officers Training Corps. In regard to recruiting the members of the medical profession for the Navy and Army the Council communicated with the Admiralty, the War Office, and the Central Committees established in England and Scotland for the purpose of assisting the Government and the medical profession, and in this way coöperated in trying to secure the proper allocation of available medical men to the two Services. In the work of the Professional Recruiting Committees certain members of the General Medical Council played an active part, so that the Council, directly and indirectly, has served well the interests both of the State and the medical profession in a matter of increasing difficulty.

Among the penal proceedings of the Council there have been several cases which turned upon the issue by medical practitioners of irregular medical certificates. There has been for some time a heavy demand on medical men for certificates, a demand which was increased by the National Insurance Act and further exaggerated by the war. The signing of medical certificates now gives enormous trouble to the medical profession with no commensurate return, but the Council, though quite aware of this point, promulgated a definite warning that the giving of irregular medical certificates was a grave professional sin. Medical practitioners are entrusted by the State with a responsibility carrying its obligations; those who are found faithless in discharging these obligations may expect now to be treated with severity.

BRITISH MEDICAL ASSOCIATION.

The work of the British Medical Association during the year has been largely concentrated upon the task of keeping the Navy and Army adequately supplied with medical practitioners without depriving the public of the necessary medical service. The Central Medical War Committee, whose administration has been conducted through the organisation of the Association, have taken measures whereby the calls upon practitioners to leave their civil duties and accept commissions have been rendered as fair as possible, and all the energies of the Association have been devoted to what has proved a difficult and delicate undertaking.

At the annual meeting of the Association the scientific and social sides were very properly dropped on account of the war, while the business generally done was purely formal. At the Representative Meeting held in London on July 28th some important subjects were discussed, especially the arrangements shortly to come into force for the State treatment of venereal diseases. A unanimous vote of the Representatives resolved that every local authority concerned in any plan for the diagnosis and treatment of venereal diseases should arrange for effective consultation at the early stages of the scheme with the local medical profession. There seems no doubt that the opinion of the medical profession as thus expressed will be respected.

THE PROFESSIONAL RECRUITING COMMITTEES.

During the year three professional Committees were recognised by the War Office to deal with claims for exemptions made by duly qualified medical practitioners—namely, the Central Medical War Committee, the Committee of Reference of the Royal College of Physicians of London and the Royal College of Surgeons of England, and the Scottish Medical Service Emergency Committee. These bodies had already been utilised by the Government in arranging for the selection of medical men for service as doctors in the Naval and Military forces and in connexion with the work of the Central Tribunal, and their activities have been regularly chronicled in THE LANCET since their formation. The Scottish Medical Service Emergency Committee, possessing a detailed knowledge of the medical men within its sphere of work, was able from the date of its formation to render practical recruiting aid and to arrange for the carrying on by substituted service of civilian practices. The task before the Central Medical War Committee was harder, and the Committee of Reference of the Royal Colleges took one important and delicate section of the work out of the hands of the larger body by dealing with the whole question of the exemptions that should be granted to medical men connected with the staffs of the London hospitals. The medical profession in England and Wales has been submitted by the Central Medical War Committee to a continual analysis, assistance in this great undertaking having been given by the three great public departments directly concerned in the supply of medical men for civilian purposes—viz., the Local Government Board, the Board of Education, and the National Health Insurance Commission. The work of the Committee has been carried on through the organisation of the British Medical Association, and has grown steadily harder as the calls of the Army increased with the prolongation of the war. At the end of the year the work of the three Committees received a great impetus from the declaration made by MR. LLOYD GEORGE in his speech in the House of Commons on becoming Prime Minister, in which the intention of the Government was stated to use all the man-power of the country to the best advantage for the prosecution of the war. The Prime Minister's words suggested that the mobilisation of the medical profession for purposes of the war, a movement which had already received support when the principles involved were debated at the Central Medical War Committee, might become the policy of the State. The work done by the three Committees has been directly preparatory to such a course, and, whether mobilisation follows Government action or arises out of voluntary effort, it may fairly be expected to proceed on similar lines in either event. Facts and figures, in mass and detail, have been collected by the Committees which ought to ensure the burden of mobilisation being fairly borne by the whole constituency, although it may be easy at the present moment to produce examples where the reverse conditions prevail.

THE MEDICAL RESEARCH COMMITTEE OF THE NATIONAL HEALTH INSURANCE COMMISSION.

The work of the Medical Research Committee throughout the year has been large and strenuous, as was proved by the second annual report, published at the close of the year. The Committee have obtained the complete record of every man in the Army who has been invalided from any cause from the time of his being wounded or being taken ill. The registers of 2000 military hospitals have been laid under contribution to this end, a uniform card system having been adopted by each institution. While most of the funds and scientific resources of the Committee have been devoted to medical questions of immediate national urgency, certain pre-war work—that in connexion with tuberculosis and rickets for example—has been carried on, while physiological research has been conducted in connexion with such varied problems as are presented by factory hygiene, poison-gases and trench-foot, to mention only three directions of the activity displayed. Assistance has been given by the Committee to an organised inquiry into fatigue in factories, and the information gained formed the basis of action for the Committee on the Health of Munition Workers when framing measures for the benefit of the workers. The physiological testing of salvarsan and its similars of French and British origin has also been undertaken; this is a task which will be of assistance to various State-supported schemes all over the country for the control of venereal disease. The value of the work of the Medical Research Committee is now uniformly recognised. Many of the scientific communications made to the Committee have appeared in our columns during the year.

THE LANCET, VOL. II., 1916: THE INDEX.

THE Index and Title-page to the volume of THE LANCET completed with the issue of Dec. 30th will be ready early in the New Year. Owing to the continued shortage in the paper-supply, the Index will not be issued with all copies of THE LANCET, as was the custom prior to the War. Subscribers who bind up their numbers are requested to send a post-card to the Manager, THE LANCET Office, 423, Strand, London, W.C., when a copy of the Index and Title-page will be supplied free of charge.

TUBERCULOSIS REPORTS.

Kent County Council.—The report from Kent is full of interest, and it is satisfactory to find that it has been possible to continue in full use the whole of the 20 dispensaries. In a scattered population the dispensary system is certainly the backbone of any efficient scheme for dealing with tuberculosis. To be regretted is the tardy and insufficient institutional accommodation for uninsured persons, but this defect is recognised and is being remedied. Special conditions have delayed the opening of the new sanatorium, but the small hospital at Keycol Hill has proved a help in dealing with some advanced as well as early cases. There are some very sound remarks upon "domiciliary" treatment, and although it must take a large amount of time for the tuberculosis officer to visit these cases, it is a desirable thing to do in coöperation with the panel doctor. The difficulty of providing extra nourishment has led to three "grades" being established, and 385 cases have been given extra food in one or other grade. Apparently voluntary care committees have not yet been established to deal with this part of the work. They should be found a distinct help to an otherwise elaborate scheme.

Borough of Middlesbrough.—The tuberculosis officer is able to report that 65 per cent. of cases who have been sent to sanatorium are now on full work. This certainly indicates that the cases are well chosen, and the method of recording results is a more practical one than that adopted by the Local Government Board. There will always be differences of opinion as to whether the disease is "arrested," and even as to whether there has been definite "improvement" resulting from certain treatment, but the fact of the working capacity being restored is a definite and easily ascertained criterion. There has evidently been sound coöperation with the school medical officers, and this augurs well for the work. The tuberculosis officer, who is a real optimist, finds the dispensary work the most economical and satisfying part of his scheme.

York City.—The stages of the disease are classified somewhat on Philip's lines, showing the relative amount of local and systemic involvement. This is a more scientific classification than Turban's, and the point is not purely an academic one, as many observers hold that a case where the local involvement is overbalanced by the systemic is not likely to do well at a sanatorium. A feature of the work has been the treatment of surgical tuberculosis in beds specially reserved at the County Hospital, and this probably solves a difficulty which many counties and boroughs are feeling, especially in relation to discharged soldiers. Care committees have been established and have already tackled the question of boarding out children in the early stages of the disease, an excellent and economically sound procedure. The tuberculosis officer reports the great need for accommodation for advanced cases.

Borough of Walsall.—It is rather disconcerting to find the definite increase in the death-rate in this borough, especially when lives are more valuable than ever, but the increase in the notification rate may really be a blessing in disguise. The work is apparently hampered by the lack of accommodation for advanced cases, and an open-air school, which should be part of the practical scheme in a borough of any size, is also a desideratum.

Paddington Dispensary for the Prevention of Consumption.—The sixth annual report only brings the work up to the end of 1914. The dispensary is now part of the official scheme for dealing with tuberculosis in the borough, and is linked up with the other details of the scheme. This has necessitated modifying some of the work in connexion with home visitation so as to prevent overlapping with the sanitary inspector's department. The fact that there were 651 new patients in 1914 shows the continued need for such an institution. The examination of contacts, which has been a distinctive feature of the work at Paddington from its commencement, shows no falling off, and 344 contacts were examined in 1914, 50 of them being found to be definite cases of tuberculosis. The importance of the contact examination is also emphasised by the fact that in 58 per cent. of the children found tuberculous a definite source of infection in the home was discovered. Philip's modification of Turban's classification is employed. The dispensary has the advantage of a voluntary care committee and also of Kensal House Open-air School, to which children are only admitted if the home conditions are good. It would seem at first sight as though those with *bad* home conditions should be dealt with first, but experience has shown that it really does not pay to spend money on patients who are bound to return to conditions which must inevitably lead to relapse. It is regrettable to find that the Poplar Open-air School had to be closed through lack of funds. The tuberculosis officer rightly pleads for more accommodation for advanced cases apart from the Poor-law provision, and also for a farm colony in connexion with the work.

York Tuberculosis Crusade.—The report of this association shows good work done, chiefly as a care committee coöperating with the dispensary. Twenty-six cases have been boarded-out under good conditions, and extra food and clothing have been supplied to cases on the recommendation of the clinical officer. The committee deplore the bad housing which renders so much of their work unsatisfactory, as do also all workers concerned with "domiciliary treatment."

Society for the Prevention and Cure of Consumption in the County of Durham.—The work has been maintained at the two sanatoriums in spite of severe losses of personnel and a serious increase in the cost of maintenance, amounting to 4*s.* 1*d.* for men and 4*s.* 10*d.* for women and children every week. A regrettable feature is the fact that the selection of cases does not appear to have been so satisfactory as in former years. The results naturally suffer and so does the usefulness of the work. The use of tuberculin has gradually been given up, though it is not quite clear upon what grounds. The difficulty of dealing with discharged soldiers who are disinclined to submit to discipline when once clear of the services is illustrated; most of them left within three weeks of their admission. This is a disturbing feature at many sanatoria and one which may well receive consideration by the Government authorities.

Hertfordshire County Council.—Dr. H. Hyslop Thomson concurs in the now general view that the dispensaries must be the pivot of any county scheme, whether they are staffed by full-time or by part-time tuberculosis officers. Tuberculin has been freely used, particularly T.O.A. and B.E., and has proved both safe and useful in dispensary practice. Extra food has had to be supplied in 142 cases, and the County Nursing Association have very generously agreed to charge no fee for nursing insured persons, so that this extra food may be available. Four care committees have already been started and eight are to follow, thus providing an efficient means of keeping in closer touch with the patients in their homes. The results of treatment are tabulated at the end of a particular course of treatment and not after an interval of time. This method, although apparently sanctioned by the Local Government Board, is unsatisfactory, in that no clue is given to the permanent value of the treatment indicated. The need of accommodation for acute cases is felt.

Devon Insurance Committee.—This is purely a lay report, and there is no comment by the tuberculosis officer. It records the treatment given by the Insurance Committee to each case and the condition of the patient 6 and 12 months afterwards. A large proportion of cases have apparently

been lost sight of, and the results are decidedly disappointing. Without analysis by the clinical officer no fair judgment can be passed on the work in Devon, but the figure given of only 38 per cent. improved does not seem on the face of it satisfactory. Apparently the system of employing health visitors to visit all notified cases and keep in constant touch with the home conditions has not been favourably received in Devon, and the dispensary work is not so prominent as in many other counties.

National Sanatorium Association.—This report concerns the Association's Sanatorium at Benenden, Kent, which has lately been passing through a period of considerable difficulty. Fortunately, prospects now seem brighter, and with the new and efficient staff which the association has been fortunate enough to obtain the sanatorium should continue to do good work. The financial difficulty has been felt acutely, and the committee justly plead for a larger measure of support for their work. Depending as they do almost entirely upon the working classes for financial aid, they have found it difficult to continue the work on broad lines. A pathetic incident in the year was the receipt from Southampton of £62 towards the Post Office block as a memorial to the two Post Office officials who went down in the *Titanic*. Dr. A. Niven Robertson has reorganised the whole of the arrangements for treatment by rest and graduated exercises on the lines laid down by Dr. Marcus Paterson, which permit of a much more gentle and regular increase in the work done by each patient, and therefore, presumably, in the amount of auto-inoculation produced, than is possible with other methods. A successful course of auto-inoculation requires to be as carefully graded and watched as a course of tuberculin inoculation, and this implies constant personal supervision from the medical officer himself. The tuberculins used have been T.Bk. (Beraneck's), B.E., and P.T.O. The use of Spengler's I.K., carefully investigated recently by Dr. Robertson, has been discontinued, as the results were disappointing. The cases are usefully classified upon Philip's method, and the results also stated in terms both of the local and the systemic infection. Treatment by nascent iodine has been tried in 10 cases, and controlled by the Arneth count of white blood cells. In all the cases considerable improvement appears to have resulted. The sanatorium suffers from the disadvantage that, not being connected with a dispensary system, it can neither select its own cases nor look after them when discharged, or the results of treatment would undoubtedly be better.

National Association for the Prevention of Consumption.—The council report that a special feature this year has been the compilation of a handbook setting out in detail the present position of the tuberculosis work undertaken by public bodies under recent legislation. This they hope to keep up to date, and it should prove a valuable guide to the whole question. The association was also very active in voicing the demand for adequate treatment of the discharged tuberculous soldier, and that the question was a serious one is shown by the fact that no fewer than 2770 were invalided out of the Army during 1915 for tuberculosis. Dr. S. Jacob has continued his excellent work as a travelling lecturer, and has found ready audiences in spite of the war. Reports are also given of a number of local branches of the association which are doing useful work.

Loomis Sanatorium, New York.—There is a very elaborate report of the work done in this sanatorium, and it is interesting to notice that, although in a neutral country, the price of food rose by 4 to 5 cents a day per head in 1915. The usual sanatorium routine has been carried out, and about 10 per cent. of the patients also received a regular course of tuberculin, and in each case definite improvement resulted. At the close of their stay about 36 per cent. of the cases were reported as "apparently arrested," and the after-histories of former patients are carefully recorded. Working capacity, however, is not specially investigated, although those returned as "in a satisfactory physical condition" number over 60 per cent. Further information would be of interest in this direction.

Adirondack Cottage Sanatorium, New York.—This well-known institution has had another successful year, a new and interesting feature being the foundation of the Trudeau school for tuberculosis officers and specialists. As the sanatorium has its own tuberculosis dispensary at Saranac Lake, clinical material is not wanting, and a fairly complete course of instruction can be provided. A number of the pupils are medical men themselves suffering from tuberculosis, and the venture is a commendable one. A training school for tuberculosis nurses is also attached. The laboratory attached to the sanatorium has, as usual, done interesting work, and is now engaged in an investigation into complement-fixation in relation to tuberculosis, with a view to finding some way of distinguishing active from arrested disease. Another point of interest is the record that in four cases the Wassermann reaction was positive, and in each case salvarsan was given with good result. About 1 in 8 of the cases were given tuberculin, and the results were satisfactory.

ANNUAL REPORT FOR 1915 OF THE CHIEF MEDICAL OFFICER OF THE BOARD OF EDUCATION.[1]

THIS annual Blue-book,[2] much reduced in size owing to the exigencies of war economy, contains in a compact form particulars of the school medical service and its administration, of the physical conditions of school children, their medical treatment in school clinics and hospitals, the physical education of the child, and juvenile employment, with several appendices of statistical and official information.

The School Medical Service and Its Administration.

Sir George Newman, in his opening remarks, refers to the inevitable curtailment of the work of school hygiene owing to the circumstances of the war, but emphasises his conviction that it is now more than ever the imperative duty of the State to secure the health and physical efficiency of the coming generation by taking advantage of the unique opportunities which school medical inspection affords of nipping in the bud preventable disease. He points out further that "if we are determined to rear a healthy and virile race of high capacity we must, from a physical standpoint, begin earlier and continue later than the hitherto accepted period of education." He reports with satisfaction in regard to this desideratum that "a complete scheme is in process of building." 450 clinics for the treatment of diseases of school life have been established, and a beginning has been made in recovery and open-air schools. Special schools for the deaf, dumb, blind, and lame also exist, but there is need for extension in this direction. Above all, the condition of the child in its *individual* aspect must form the basis of its successful handling, whether by medical or by educational authorities.

Reviewing the administration of the school medical service, it is pointed out that the need for retrenchment during the past year, from considerations not merely of public economy but of the paucity of medical officers available, has of late necessarily limited its activities. Progressive schemes have consequently had to be deferred or curtailed, but continued attention to the established routine of work has been maintained notwithstanding the fact that the net loss in the number of school medical officers and their assistants approximates to about 12 per cent. Special inquiries have been carried out on the suggested subjects of adenoids and malnutrition, as well as upon the condition of the teeth and the morbific relations of oral sepsis; and Dr. W. H. Hamer, medical officer of health of the County of London, has contributed two interesting researches, one on A Persistent Carrier of Diphtheria Bacilli, the other on the Prevalence of Fleas in Relation to the Incidence of Scarlet Fever.

"Following up" has been carried on mainly by the school nurses and also by the children's care committees, who frequently assist parents to obtain material and medical aid when necessary for their children. Special schools for blind, deaf, defective, and epileptic children have, in spite of war difficulties, continued their useful work, and these numbered, in 1915, 403, as against 397 in the previous year; their aggregate accommodation being for 30,942 pupils;

[1] A leading article on this report was published in THE LANCET of Sept. 23rd, 1916, p. 561.
[2] London, 1916, Eyre and Spottiswoode, Ltd. Pp. 169 + viii. Price 9*d*.

2791 places being for blind, 4568 for deaf, 14,643 for mental defectives, and 5291 for those physically defective. There were also 1626 for tubercular cases, 496 for epileptics, and 1527 in open-air schools.

No less a sum than £411,428 was expended in 1914–15 on the school medical service, on account of which a Government grant of £192,414 was paid. Schools for mothers and day-nurseries also received grants from the Board amounting to £15,333 18*s.* with a view to the training of the mother in infant welfare, and the right commencement of the training of the child in the habits and ways of health.

Physical Conditions of School Children.

Section II., on Physical Conditions, deals with the following categories: (1) uncleanliness, malnutrition, and minor ailments; (2) defective vision and adenoids; and (3) heart disease and tuberculosis.

Under the first heading a summary table is printed showing that in 40 educational areas (with average attendance of 1,091,431) of 380,891 children examined 84·6 per cent. were reported clean as regards condition of body, 14·6 per cent. as dirty, and 0·8 per cent. with pediculi present, with slightly higher percentages of unclean heads. This means that about 150,000 elementary school children in each million are unclean either in body or head, and many thousands of children are excluded from attendance at school daily on account of uncleanliness. Consequently "a child habitually verminous is an uneducated child"; and surely, as a matter of public policy, the universal provision of "cleansing stations" (as has been effected in London) is imperative.

Amongst "minor ailments" are included cases of ringworm, one of the most prolific causes of loss of school attendance, and it is satisfactory to learn that "a number of authorities have done admirable work" in organising methods for its prevention and cure, including, of course, X ray treatment. With regard to defective vision, attention is drawn to the much larger incidence of eye defects in urban as compared with rural areas, the percentage in the latter being only about 9, while in county boroughs it rises as high as 25. As these figures are based upon limited "sample" examinations they can hardly be accepted as final, and possibly the small proportion reported from the country may be due to inferior facilities for expert ophthalmic examination.

Considerable space is devoted to the subject of adenoids, and a report by Dr. Hamer is printed in full. Here, again, the prevalence appears to be greater in urban than in rural areas, though the difference is not so marked as with eye defects. It is stated that in 76 local education areas 309,637 children were examined and the percentage of those with adenoids was 3·7 and with marked adenoids 1·31. Dr. C. J. Thomas is quoted as reporting the percentage of children, aged between 11 and 12, in elementary schools affected with adenoids as 4·7 per cent. of boys and 5·4 of girls, as against 5·8 per cent. of boys and 9·2 of girls in mentally defective schools, while amongst scholarship children of the same age the percentage was only 1·9 for boys and 2·2 for girls.

Heart disease was reported in from 1 to 5 per cent. of the children examined in 1915; but the chief medical officer seems to think that there is room for greater care and discrimination in this regard. In this connexion a useful leaflet for parents on "The Control of Rheumatic Fever," issued by the school medical officer for Tunbridge Wells, is printed in the report.

Some ten pages are occupied with the subject of tuberculosis in children. An elaborate table of the mortality at several ages (4 groups being under 15) from all causes and from tuberculous disease, 1907–15, has been furnished by Dr. T. H. C. Stevenson, Superintendent of Statistics, and precedes one compiled from returns supplied by school medical officers from 1911 to 1915. The latter gives 0·46 as the percentage of tuberculosis found in 1915 in the routine examination of 272,618 children in 52 areas, about one-third being cases of phthisis, and a percentage of 2·46 found amongst "special cases," i.e., cases specially selected as ailing, in 19 areas. Six open-air day schools have been certified for phthisical children, who are also received at Parkhill Hospital, Liverpool. Four metropolitan hospitals, admitting children with surgical tuberculosis, have been certified as day special schools by the Board; and 18 residential sanatorium schools in the country have also been certified.

Medical Treatment.—Physical Education of the Child.

Section III. deals with medical treatment, and of this the two-fold object is stated to be: (1) to remove obstacles to the normal and proper educational development of the child, physically and mentally, and (2) to assist nature in bringing about the cure or arrest of disease. The advantage of providing a system of medical treatment over leaving the matter to chance is insisted on, and it is stated that 279 local education authorities had such schemes in operation during 1915, either by arrangement with neighbouring hospitals or in the form of school clinics. Dental treatment has been provided by 147 education authorities, and there are 55 whole-time dental officers.

Section IV. treats of the physical education of the child, the four principal means of obtaining this being stated to be: (*a*) the teaching of hygiene and cleanliness; (*b*) the feeding of school children; (*c*) systematic physical training: and (*d*) open-air education.

Under (*a*) it is pointed out that in order to inculcate hygienic principles as "a way of life" "there must be appropriate lessons in hygiene, combined with practical work by the children, and supervision of their own personal hygiene by the teacher." Lessons on food and drink and instruction in temperance form part of the scheme.

With regard to (*b*), the findings of medical inspection indicate that about 10 per cent. of nearly 6,000,000 children attending public elementary schools suffer from malnutrition, and the paramount consideration seems to be that to secure proper physical and mental development the growing child must be sufficiently fed. Questions of ways and means are rather for the public authorities than for the profession, but it may be interesting to note that in the autumn of 1914 no fewer than 195,000 elementary school children were in receipt of free meals, and that their number had declined to 22,615 by July, 1916. Grants made in aid by the Board depend, *inter alia*, upon the extent to which the work is coördinated with that of the school medical service, with which it rests to suggest suitable dietary and to watch the effect on the children.

(*c*) As regards systematic physical training it must be such as to promote the healthy growth and development of the children, without exaggeration or undue strain, the latter being mainly a medical question. The same remark applies to organised games.

(*d*) Open-air life, wherever and whenever practicable, is referred to by Sir George Newman as "the fourth essential condition of physical education." He describes various modes of securing it, and especially mentions the experimental playground classes and classes held in the public parks—a scheme, by-the-by, advocated by Séguin in New York so long ago as 1877—with much approval, advocating a substantial advance in this direction. It appears that so far only a score of education authorities have established systematic open-air instruction.

Juvenile Employment.

The subject of juvenile employment is discussed in the last section (V.). Owing to existing war conditions this is a somewhat thorny question, but it is the medical aspect that is prominent in Sir George Newman's remarks. It is within the province of the school medical service to consider the physical condition of the child allowed to leave for employment before the age of 14 and to guard him from strain too often involved in labour prematurely undertaken by an immature youth.

The chief medical officer deprecates the growing tendency to excuse from school attendance children not even 12 years of age for employment in agriculture, as it would probably mean the discontinuance of further education. In industrial employment and in munition-making boys of 13 have been allowed to take part, but the Board of Education rightly insist that in these emergency cases it should be ascertained that the employment is of a character suitable to the physical capacity of the boy. In this connexion are printed extracts from a very practical report by Dr. T. Chetwood, school medical officer for Sheffield, in which particulars are given of the children exempted from school in 1915.

In the closing page of his report Sir George Newman insists upon the necessity, in the public interest, of (1) careful

examination of *all* leavers; (2) prompt and adequate remedy of defects discovered; and (3) close coördination between school medical officer, certifying factory surgeon, and juvenile employment committee. As he truly remarks: "The State cannot be true to its responsibility, unless it is watchful over the child both before it enters school, and after it leaves school."

The last annual report of the chief medical officer of the Board of Education has already been noticed in our columns, and at all points it presents theories and facts worth attention and discussion—it must be read for their appreciation. We congratulate him on the skill with which he has marshalled so considerable a mass of information, valuable alike to the medical profession, the educationist, and the social reformer, within a space less than half that occupied in previous reports.

THE CONTROL OF VENEREAL DISEASES.

Local Government Board Circular.

ON a circular with attached memorandum and forms, dated Dec. 22nd, and addressed to the councils of counties and county boroughs, the secretary of the Local Government Board draws attention to the prescribed records and returns for laboratories and treatment centres. A system of case-papers and registers is submitted for the consideration of hospital authorities. Kharsivan, arsenobillon, and novarsenobillon are mentioned as the salvarsan substitutes at present approved, and the price at which these drugs can be obtained by local authorities has been fixed at 5*s.* for a dose of 0·6 gm. for kharsivan and arsenobillon, 3*s.* for the same dose in the case of novarsenobillon, and smaller doses in proportion. A uniform payment of 6*d.* a packet is suggested to recoup practitioners for out-of-pocket expenses in transmitting specimens to the laboratory. The question of the liability of councils for the cost of treatment of patients at institutions not included in the scheme is also dealt with in the circular.

Progress of County Council Schemes.

Mr. Hayes Fisher informed the House of Commons last week that 34 out of 146 councils had submitted schemes for the approval of the Local Government Board, and in practically every other case the Board had received information that schemes were in preparation. In a large proportion of these cases the negotiations with hospitals and other bodies were nearing completion.

Dr. W. H. Hamer, medical officer of health of London, has issued further details of the scheme which we summarised in THE LANCET of Dec. 2nd (p. 954). A schedule is given of the days and times for attendance at the 22 hospitals (reckoning the male and female departments of the Lock Hospital as two) with which arrangements have been made. In many cases the venereal clinic is open every day, and the times vary from 9 A.M. to 8 P.M., so as to suit every kind of occupation. A series of eight leaflets, authorised by the Local Government Board, accompany the circular, fixing the form of application for pathological outfit or for arsenobenzol, the form of pathological reports, the instructions to be given to patients and the public in regard to personal precautions and the dangers of infection.

The Derbyshire county council is arranging for treatment at the various hospitals in the county and at a clinic to be established at Chinley, boards of guardians to deal with their own cases. Two medical men, Dr. G. K. Smiley and Dr. Albert Green, were coöpted on to the Public Health Committee to assist in administering the scheme. A conference at the Swansea Hospital was recently attended by representatives of the county councils of Brecon, Carmarthen, Glamorgan, Pembroke, and of the Swansea Health Committee. The infirmary board of the North Riding of Yorkshire has expressed its willingness to administer a separate hospital for venereal diseases, but not to provide a clinic. The Portsmouth town council are approaching other councils throughout the country with a view to bringing concerted pressure on the Local Government Board to prohibit the non-medical treatment of venereal diseases.

The Detection and Treatment of Contacts.

Miss Norah March, B.Sc., in describing social service work in Boston, U.S.A., touches upon a point of great practical importance—viz., the moral obligation of each person infected with venereal disease of any kind to secure the examination and, if need be, treatment of the person from whom the infection was derived or to whom it may have been handed on. Miss March writes: "This would seem perhaps to be a difficult thing to do, less difficult, however, in cases of innocent infection, of which in the syphilis clinic at the Massachusetts General Hospital they have 40 per cent. of their cases, than in cases which involved a personal problem. But a scheme has been launched in one of the institutions which I visited whereby this effort has been attended with very considerable success. The patient, having had the nature of his complaint made clear to him and the possible serious consequences—personal and social—of neglected infection impressed upon him, is supplied with a certain printed form, which carries no name or identification mark upon it. Any person coming to the clinic for examination and presenting one of these forms is accepted for examination *without any questions being asked*, and is thus relieved of all embarrassment. At the time of my visit the figures given to me were that out of 300 forms which had been so given out, 290 had been returned to the hospital by persons presenting themselves for examination. Education of the public in regard to the nature and the prevalence of syphilis and gonorrhœa is much more widespread than has been achieved in this country so far; there is more alertness in regard to possible infection and more readiness to seek advice in connexion therewith. That will account, in part, for the somewhat surprising considerable response which has attended these efforts of the social service department."

Venereal Disease in Prisons.

In their report for the year 1915–16 (Cd. 8342. Wyman and Sons. 2½*d.*) the Commissioners of Prisons correct the inference which might be drawn from the report of the Royal Commission that no action had been taken in prisons to diagnose syphilis and give intravenous treatment. The treatment, they state, is being administered at present in a certain number of prisons, and it is hoped shortly to complete a scheme of collecting all cases suitable to undergo the treatment at certain prisons as centres. The Commissioners welcome the establishment of centres throughout the country where the treatment of short-sentence prisoners can be efficiently continued on discharge, and the admitted evil of their discharge while still in an infectious condition counteracted.

Appointments at Guy's Hospital.

In connexion with the Local Government Board and London County Council schemes the following appointments have been made at Guy's Hospital:—Assistant to the Obstetric Surgeons, Miss Morna Rawlins, M.B., B.S. Lond.; to the Dermatologist, Mr. L. S. Gathergood, M.R.C.S., L.R.C.P.; to the Genito-Urinary Surgeon, Captain G. E. Genge-Andrews, M.B., B.S. Lond.; Assistant Bacteriologist: Miss Una Griffin, M.B., B.S. Lond.

THE POSITION OF DISCHARGED SOLDIERS UNDER THE NATIONAL INSURANCE ACTS.

Memorandum 228/I.C. issued by the Insurance Commissioners (England, Scotland, and Wales) calls the attention of Approved Societies to the notifications which they are required to send to Insurance Committees of changes affecting the Committees' Index Registers; and Circular 55/I.C. is a memorandum addressed to Insurance Committees explaining their duties with regard to the completion of their registers upon receipt of the necessary materials from the societies or from those who are not members of societies. Stress is laid upon the importance of dealing with the whole matter as urgently important and of following exactly the instructions given. The accuracy and completeness of the lists of the Insurance Committees and of the societies is naturally of the first interest to medical men on the panels, but the circulars mainly concern the bodies to which they are directed; the responsibility for carrying out the instructions is laid upon the societies, and they will be sufferers, as well as the members of the medical profession and their patients, if confusion prevails. At the same time, no doubt, the depletion of their clerical staffs will render their task difficult.

To medical men on the panels perusal of the two documents referred to will bring home the complicated nature of the task of reorganising during the war, as well as the altered circumstances of panel practice. The correction of lists in connexion with the removal from the registers of index slips relating to suspended persons, many of whom have enlisted, is conducted under a modified procedure instituted with a view of reducing the work. The reinstatement of persons coming back into insurance in order that they may obtain medical benefit, means for medical practitioners the duty of attending a growing number of patients who have been discharged from the Army as medically unfit. It will be observed that the insurance committees have to deal with two main classes of insured persons seeking reinstatement—those who are members of societies, and those who are not—and that various conditions may affect the position of members of either class. Among those who are not members of societies, for example, there will be some who have been discharged from the Army as medically unfit, and who have been insured during service. These will be entitled to admission to benefits from the Navy and Army Insurance Fund, and arrangements are to be made at once for their medical benefit; a form forwarded to the Commissioners at Maida Hill, who have the care of deposit contributors, is marked "Medical card issued." What relation the number of these will bear to those not discharged upon medical grounds is not, of course, indicated, but the medical profession will regret that in the case of these men, who may be expected to need medical care less frequently in the future as well as less urgently, a longer procedure is necessary, varying according to circumstances. A man who has been a deposit contributor before enlistment will, indeed, be ordinarily entitled to medical benefit at once, but the form forwarded on his behalf to Maida Hill will be marked "Medical card not issued," and his claim will be investigated in that department. On the other hand, a man who has only been insured when in the Army will also be dependent upon the decision of the Commissioners at Maida Hill, and in any case will have to wait three months before being entitled to the modified benefits provided for a deposit contributor. It is advised that to such men the advantages of joining an Approved Society at once, and of so securing medical benefit without further delay, should be explained when they apply to an Insurance Committee.

Experience alone will show how far the reconstruction of financial arrangements between the Insurance Committees and the medical profession will be necessitated by altered circumstances brought about by war.

THE SERVICES.

COMMISSIONS IN THE INDIAN MEDICAL SERVICE.

IT has been already announced in THE LANCET that after the open competitive examination held last July for admission to the Indian Medical Service no similar examination would be held during the continuance of the war, but that such appointments as might be required to meet the absolutely indispensable needs of the service would be made by nomination by the Secretary of State. To assist him in making these appointments, which will be limited in number to the needs of the service, Mr. Chamberlain has appointed a Selection Committee who will interview such applicants as may appear to be suitable, and make recommendations accordingly. Applications for appointment should be addressed to the Secretary of the Military Department, India Office, Whitehall, S.W., and should contain concise particulars of the medical degrees and career of the candidates, who must be over 21 and under 32 years of age at the time of application. Particulars regarding pay, promotion, and conditions of service can be obtained from the Secretary, Military Department.

ARMY MEDICAL SERVICE.

Col. C. E. Faunce is retained on the Active List.

ROYAL ARMY MEDICAL CORPS.

J. Baker to be temporary Honorary Major whilst employed at the Crowthorne War Hospital.

H. P. Foulerton to be temporary Honorary Captain whilst employed at the Crowthorne War Hospital.

Temp. Lieuts. to be temporary Captains: A. G. Henderson, W. B. Walker, F. de C. Keogh, W. Gemmill, T. W. Melhuish, H. Whitehead, J. W. McDonald, P. Lornie, M. W. Baker, O. W. Bateman, C. S. Wynne, A. F. Laird, W. G. Silvester, W. Bannerman, H. P. Gibb, J. R. Craig, T. C. Harte, B. E. Spurgin, W. Stirling, J. G. Gray, R. H. Bremridge, R. H. Urwick, A. E. Fiddian, W. M. Penny, W. E. Barker, H. R. S. Walford, R. J. Vernon, A. J. Beadel, J. A. Lowry, A. Campbell, J. C. Padwick, A. W. Senior, W. W. Stacey, L. M. Smith, G. B. Buckley, P. Verdon, P. L. Moore, C. C. Twort, A. G. Peter, A. W. Wilcox, G. D. E. Tullis, W. Crabtree, J. W. Tocher, J. R. Rees, J. A. Marsden, W. J. Edgar, H. Hargreaves, A. Davidson, H. E. Dyson, F. P. Young, E. Hesterlow, A. L. McCreery, H. O. Gough, J. D. Cooke, G. H. Simpson, W. B. Tannahill, K. Pretty, T. S. Brook, J. A. Harper, C. H. Mossop, J. N. J. Hartley, B. P. Campbell, C. G. H. Campbell, C. B. Jones, R. Sinclair, M. W. Talbot, R. C. J. Stevens, F. W. Bartlett, P. Davies, C. Berry, F. H. Young, A. P. Fry, E. Purcell, R. C. Lowe, J. A. Venning, H. Mather, J. C. Wilson, J. C. Wadmore, G. B. Salmond, D. C. Adam, P. D. Scott, W. B. Loveless, G. Ellis, C. J. Pentland, T. J. Lloyd, V. K. Sadler, D. I. Anderson, W. T. Brown, E. R. Grieveson, W. J. Spearing, H. J. Keane, C. W. J. Dunlop, E. W. Kirk, R. M. Lang, R. C. Cooke, J. W. Harvey, R. S. Harvey, F. C. Drew, D. K. Parkes, W. Craig, J. F. Adamson, M. H. Cane, R. Paul, C. M. Roberts, J. Bain, H. K. Kirkland-Whittaker, and J. G. Copeland.

Late temp. Lieuts., R.A.M.C., to be temporary Captains: L. M. Morton, C.A.M.C., and O. G. Donovan, C.A.M.C.

To be temporary Captains: A. K. H. Pollock, J. G. Taylor, W. G. Heasman, late Surgeon-Captain, Royal Berks Regiment, S. E. Denyer, C.M.G., and M. Murphy, late temporary Captain, R.A.M.C.

To be temporary Lieutenants: G. O'Neill Waddington, B. Cohen, B. Knowles, H. D. Wilson, F. A. Godson, E. W. Hall, W. W. D. Thomson, F. A. Faulkner, A. W. G. Murray, J. J. O'Mullane, W. M. G. Guinness, B. G. H. Connolly, C. L. Warke, G. Gordon, J. Carrick, G. A. Mavor, R. C. Rogers, H. W. Windsor-Aubrey, M. H. Bland, W. Daunt, D. Finlayson, C. Speers, R. A. Hosegood, J. S. Bellas, W. M. Christie, H. W. Bernard, T. M. Thomson, T. M. Guthrie, J. A. Berlyn, B. Muir, J. D. Gray, F. Lilley, J. R. Sinton, F. W. Cheese, J. P. Fehily, T. McC. Sellar, C. H. Burgess, H. L. Sinclair, B. Baylor, T. E. Adams, H. F. Sheldon, T. R. Robertson, J. A. McIlroy, H. A. Grierson, A. E. Hart, A. Newton-Brady, G. H. Adam, and W. E. Ord.

Temp. Major A. W. May relinquishes his commission.

Temp. Capts. relinquishing their commissions: G. E. Vilvandré, C. L. Graham, S. Jacob, F. W. Milne, H. Mowat, C. Weller, T. S. G. Martin, C. Powell, G. Norman, A. E. Cotterill, J. McManus, S. McM. McLay, A. L. McLean, A. T. Smith, W. P. H. Munden, and T. Grimson.

Temp. Lieuts. relinquishing their commissions: L. M. Morton, J. B. Wilman, F. H. Lawson, T. McG. Fletcher, S. Simons, A. L. Vaughan, D. J. Guthrie, A. W. S. McComiskey, P. J. Verrall, J. T. Reardon, J. Honeyford, R. T. MacLaren, W. E. Plummer, R. Roberts, A. B. Pugh, J. R. Elwood, H. F. Williams, F. W. Daniels, E. Sutcliffe, J. Unsworth, R. B. Austin, S. B. Legge, H. P. Thompson, G. C. McIntyre, M. E. Embree, C. L. Gass, W. W. Cruise, H. A. Jones, J. G. Cunningham, A. W. Nixon, and A. B. Tucker.

SPECIAL RESERVE OF OFFICERS.

Temp. Lieut. J. Eric Cheeseman, from R.A.M.C., to be Captain.

TERRITORIAL FORCE.

Lieut. V. T. Ellwood to be Captain.

JOURNAL OF THE ROYAL ARMY MEDICAL CORPS.

The December issue of this journal, which closes Vol. XXVII., contains a useful article on the Determination of Sugar in the Blood, by Captain Charles G. L. Wolf and Walter C. Ball, Sc.D., the authors believing that "the accurate determination of the concentration of sugar in the blood would assist in the differential diagnosis of certain conditions brought about by exposure to great mental excitement." Honorary and Temporary Lieutenant-Colonel Sir John Collie writes on the Examination of the Back in Cases of Injuries, which "appear to be uninteresting to everyone except those who suffer, and who have to pay, ...they are usually relegated to the care of the junior ....."; but, "as a matter of fact, there is quite a fascinating interest in tracing an inadequately defined pain to its true source, or proving its non-existence." Other articles are: On Some Cases of Abdominal Injury Treated at the Front, written by Captain E. H. Udall in conjunction with Captain W. C. Horton; and Observations on the Serum Reactions of 300 Unselected Cases of "Enteric"[1] from the Eastern Mediterranean with the Oxford Standard Agglutinable Cultures, by Captain Ernest Glynn and Dr. E. Cronin Lowe.

[1] Vide THE LANCET, 1916, ii., 222.

VITAL STATISTICS.

VITAL STATISTICS OF LONDON DURING NOVEMBER, 1916.

IN the accompanying table will be found summarised complete statistics relating to sickness and mortality in the City of London and in each of the metropolitan boroughs. With regard to the notified cases of infectious diseases, it appears that the number of persons reported to be suffering from one or other of the 10 diseases specified in the table was equal to an annual rate of 5·0 per 1000 of the population, estimated at 4,310,030 persons in the middle of the year; in the three preceding months the rates were 4·0, 4·9, and 5·4 per 1000. The lowest rates last month were recorded in Kensington, the City of Westminster, St. Marylebone, the City of London, and Hampstead; the highest rates were recorded in St. Pancras, Shoreditch, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The prevalence of scarlet fever showed a slight decline last month; among the various metropolitan boroughs the greatest proportional prevalence of this disease was recorded in Chelsea, Shoreditch, Bethnal Green, Stepney, Poplar, Battersea, and Wandsworth. The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals, which had been 1097 and 1117 at the end of the two preceding months, had declined again to 1056 at the end of last month; the weekly admissions averaged 131, against 143 and 160 in the two preceding months. Diphtheria was more prevalent than it had been in the preceding month; this disease was proportionately most prevalent in Stoke Newington, Shoreditch, Bethnal Green, Stepney, Southwark, Deptford, and Greenwich. The Metropolitan Asylums Hospitals contained 1543 diphtheria patients at the end of last month, against 1235, 1287, and 1479 at the end of the three preceding months; the weekly admissions averaged 187, against 135, 167, and 209 in the three preceding months. The prevalence of enteric fever showed very little variation from that recorded in the previous month; of the 55 cases notified during November, 15 belonged to St. Pancras, 5 to Stepney, 4 each to Kensington, Hackney, and Shoreditch, and 3 each to Paddington, Islington, and Wandsworth. There were 42 enteric fever patients under treatment in the Metropolitan Asylums Hospitals at the end of the month, against 35 and 39 at the end of the two preceding months; the weekly admissions averaged 7 in each of the last three months. Erysipelas was proportionally most prevalent in Finsbury, Bethnal Green, Southwark, and Camberwell. The 21 cases of puerperal fever notified during the month included 3 in Wandsworth and 2 each in the City of Westminster, Bethnal Green, Stepney, Poplar, Lambeth, and Lewisham. The 23 cases of cerebro-spinal meningitis included 4 each in Hackney and Wandsworth, 3 in St. Pancras, and 2 in Lewisham; and the 26 cases of poliomyelitis included 3 each in Southwark, Wandsworth, and Camberwell, and 2 each in Fulham, Hackney, Stepney, and Bermondsey.

The mortality statistics in the table relate to the deaths of persons actually belonging to the several metropolitan boroughs, the deaths occurring in institutions having been distributed among the boroughs in which the deceased persons had previously resided. During the five weeks ending Dec. 2nd the deaths of 6013 London residents were registered, equal to an annual rate of 14·5 per 1000, the rate in each of the two preceding months having been 12·0 per 1000. The death-rates last month ranged from 10·1 in Hampstead, 10·8 in Lewisham, 11·8 in Wandsworth, 12·4 in Battersea, and 12·6 in Woolwich, to 17·0 in Bethnal Green, 17·4 in Shoreditch, 18·2 in Finsbury, 18·3 in Holborn, 18·9 in Southwark, and 19·3 in Bermondsey. The 6013 deaths from all causes included 291 which were referred to the principal infectious diseases; of these, 53 resulted from measles, 6 from scarlet fever, 63 from diphtheria, 5 from whooping-cough, 8 from enteric fever, and 156 from diarrhœa and enteritis among children under 2 years of age. No death from any of these diseases was recorded last month in Chelsea, Hampstead, or the City of London; among the other boroughs they caused the lowest death-rates in Kensington, the City of Westminster, and Wandsworth, and the highest rates in Paddington, Shoreditch, Bethnal Green, Poplar, Southwark, Bermondsey, and Greenwich. The 53 fatal cases of measles were 74 fewer than the

ANALYSIS OF SICKNESS AND MORTALITY STATISTICS IN LONDON DURING NOVEMBER, 1916.

(*Specially compiled for* THE LANCET.)

CITIES AND BOROUGHS.	Estimated civil population, 1915.	NOTIFIED CASES OF INFECTIOUS DISEASE.											DEATHS FROM PRINCIPAL INFECTIOUS DISEASES.									Deaths from all causes.	Death-rate per 1000 living.
		Small-pox.	Scarlet fever.	Diphtheria.*	Typhus fever.	Enteric fever.	Other continued fevers.	Puerperal fever.	Erysipelas.	Cerebro-spinal meningitis.	Poliomyelitis.	Total.	Annual rate per 1000 persons living.	Small-pox.	Measles.	Scarlet fever.	Diphtheria.*	Whooping-cough.	Enteric fever.	Diarrhœa and enteritis (under 2 years).	Total.	Annual rate per 1000 persons living.		
LONDON	4,310,030	—	709	951	—	55	7	21	238	23	25	2050	5·0	—	53	6	63	5	8	156	291	0·7	6013	14·5
West Districts.																								
Paddington	131,397	—	12	22	—	3	—	1	6	—	—	44	3·5	—	—	—	—	—	—	12	12	1·0	198	15·7
Kensington	155,795	—	19	15	—	4	—	—	4	1	—	43	2·9	—	—	—	2	—	—	3	5	0·3	222	14·9
Hammersmith	118,559	—	17	30	—	1	—	—	7	—	1	56	4·9	—	—	—	1	—	—	3	4	0·4	161	14·2
Fulham	151,161	—	23	38	—	1	—	1	7	—	2	73	5·2	—	—	—	5	—	—	6	11	0·8	189	13·0
Chelsea	58,421	—	15	4	—	—	—	—	2	—	1	22	3·9	—	—	—	—	—	—	—	—	—	86	15·4
City of Westminster	135,104	—	17	13	—	1	—	2	4	1	—	38	2·9	—	1	—	2	—	—	1	4	0·3	181	14·0
North Districts.																								
St. Marylebone	100,260	—	8	14	—	1	—	—	4	—	—	27	2·8	—	—	—	1	—	—	5	6	0·6	145	15·1
Hampstead	81,760	—	11	10	—	—	—	—	4	—	—	25	3·2	—	—	—	—	—	—	—	—	—	79	10·1
St. Pancras	200,322	—	29	53	—	15	—	—	10	3	1	111	5·8	—	2	—	3	—	1	3	9	0·5	295	15·4
Islington	316,242	—	47	61	—	3	—	1	15	1	1	129	4·3	—	1	1	8	1	3	11	25	0·8	451	14·9
Stoke Newington	50,527	—	6	17	—	—	—	—	1	—	—	24	5·0	—	—	—	—	—	—	2	2	0·4	62	12·8
Hackney	217,883	—	36	38	—	4	1	—	13	4	2	98	4·7	—	1	2	3	—	—	2	8	0·4	296	14·2
Central Districts.																								
Holborn	40,405	—	4	10	—	2	—	—	1	—	—	17	4·4	—	—	—	2	—	—	1	3	0·8	71	18·3
Finsbury	76,915	—	7	16	—	—	—	—	10	—	1	34	4·6	—	—	—	1	—	—	4	5	0·7	134	18·2
City of London	19,461	—	1	2	—	—	—	—	—	—	—	3	1·6	—	—	—	—	—	—	—	—	—	25	13·4
East Districts.																								
Shoreditch	103,627	—	31	33	—	4	5	1	5	—	—	78	7·6	—	—	—	—	—	3	14	17	1·7	173	17·4
Bethnal Green	120,207	—	31	37	—	—	—	2	20	—	—	90	7·8	—	4	—	2	—	—	9	15	1·3	196	17·0
Stepney	285,731	—	65	103	—	5	—	2	23	1	2	201	7·9	—	2	1	3	1	—	12	19	0·7	347	13·6
Poplar	156,247	—	32	27	—	1	—	2	10	1	1	74	4·9	—	5	1	2	1	—	8	17	1·1	233	15·6
South Districts.																								
Southwark	179,424	—	25	52	—	—	—	—	19	1	3	100	5·8	—	7	—	3	1	—	7	18	1·0	326	18·9
Bermondsey	117,188	—	20	26	—	1	—	—	6	—	2	55	4·9	—	7	—	4	—	—	4	15	1·3	217	19·3
Lambeth	284,188	—	40	40	—	1	—	2	12	1	1	97	3·6	—	2	—	6	—	—	15	23	0·8	460	16·9
Battersea	161,945	—	32	25	—	2	—	—	8	1	1	69	4·4	—	3	—	—	—	1	4	8	0·5	193	12·4
Wandsworth	312,249	—	63	43	—	3	1	3	16	4	3	136	4·5	—	—	—	4	1	—	5	10	0·3	368	11·8
Camberwell	254,385	—	45	39	—	—	—	1	24	1	3	113	4·6	—	4	1	3	—	—	12	20	0·8	311	12·7
Deptford	110,299	—	20	34	—	—	—	—	7	—	—	61	5·8	—	1	—	3	—	—	3	7	0·7	150	14·2
Greenwich	96,385	—	14	35	—	2	—	—	3	1	—	105	11·4	—	5	—	2	—	—	4	11	1·2	132	14·3
Lewisham	164,438	—	21	36	—	1	—	2	9	2	1	72	4·6	—	5	—	2	—	—	3	10	0·6	170	10·8
Woolwich	129,505	—	15	31	—	—	—	1	8	—	—	55	4·4	—	3	—	1	—	—	3	7	0·6	156	12·6
Port of London	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—

* Including membranous croup.

corrected average number in the corresponding period of the five preceding years; this disease was proportionally most fatal last month in Bethnal Green, Poplar, Southwark, Bermondsey, and Greenwich. The 6 deaths from scarlet fever were only one-fifth of the corrected average number, and included 2 in Hackney and 1 each in Islington, Stepney, Poplar, and Camberwell. The 63 fatal cases of diphtheria were 10 fewer than the corrected average number; the greatest proportional mortality from this disease occurred in Fulham, Holborn, Bermondsey, and Deptford. The 5 deaths from whooping-cough were 42 below the average, and belonged respectively to Islington, Stepney, Poplar, Southwark, and Wandsworth. The 8 fatal cases of enteric fever showed a decline of 4 from the corrected average, and included 3 each in Islington and Shoreditch, and 1 each in St. Pancras and Battersea. The 156 deaths from diarrhœa and enteritis among children under 2 years of age were 31 below the average; the greatest proportional mortality from this cause was recorded in Paddington, St. Marylebone, Finsbury, Shoreditch, Bethnal Green, Poplar, and Lambeth. In conclusion, it may be stated that the aggregate mortality in London last month from these principal infectious diseases was 39·0 per cent. below the average.

Correspondence.

"Audi alteram partem."

OBSERVATIONS ON THE ANTISEPTIC TREATMENT OF WOUNDS.

To the Editor of THE LANCET.

SIR,—In your issue of Dec. 23rd the use of a camphor-carbolic mixture as a disinfectant of projectile wounds is advocated by Mr. I. Feldman and Captain A. J. Walton in their communication on "Observations on the Antiseptic Treatment of Wounds," and at first sight, to judge by their results, they appear to have established their case. As I have recently completed a paper dealing with the principles of treatment of wound infections, which I hope will be published shortly, I do not wish to occupy your space at length, but confine myself to a few comments.

In November, 1914, I went out to France with Colonel H. M. W. Gray and commenced work on war surgery there with him, and it is interesting to record that camphor-carbolic was the first antiseptic which we employed in wound treatment. I feel sure that I am not misrepresenting the views then held by Colonel Gray when I say that he started work in France with a bias in favour of camphor-carbolic, anticipating great things, as he had previously obtained excellent results from it in civil practice. On his recommendation I adopted it, and we both used it extensively at first. Not being impressed with the results, I tried several variations and changes—equal parts of camphor-carbolic and tinct. iodi, pure carbolic acid, equal parts of carbolic acid and tinct. iodi, pure tinct. iodi, liquor iodi fort.—and in a comparatively short time Colonel Gray and I both came to the conclusion that it was a matter of indifference what antiseptic one employed in the wound, so far as the control of infection was concerned—nay, more, that the use of antiseptics did not appreciably affect the course or duration of the infection. I am still of this opinion, in spite of various new antiseptics recommended and tried, and I have long since abandoned their use in wound treatment as a means of controlling infection.

Efficient and adequate *mechanical* drainage is, I believe, the one and only secret of success in dealing with infection, and for nearly two years I have held the view that once proper drainage is established it is a matter of indifference whether one employs antiseptics or concentrated saline solutions. So far as I have been able to determine by careful observation, the use of either does not appreciably affect the course of infection, and their values are certainly so subsidiary as to be negligible. With good mechanical drainage they are unnecessary; without it they are useless.

Certain passages in Mr. Feldman and Captain Walton's paper appear to me to support this view, and I believe they indicate the factor to which their improved results are due:—

"As is the case when using any other application, it is primarily essential to provide adequate drainage." "When the treatment is commenced some days or weeks after the infliction of the wound, it is again necessary to open up all sinuses and pockets so that the fluid may reach all the septic areas, and, if necessary, tubes should be inserted so that free drainage is established." "..... and we have frequently noticed that, if there is a pocket of pus undrained into which the antiseptic does not enter, the surface will not dry. ..... Such a condition is an indication for further drainage." "It will be noticed that several of our cases continued to have a large amount of discharge until more free drainage was provided, after which it rapidly ceased."

The authors here clearly recognise that without adequate drainage camphor-carbolic is worthless.

In their "control cases" a death-rate of 10 per cent. and an amputation-rate of 20 per cent. are inexplicable to me, except on the supposition that drainage was most inadequate, no matter what local therapies were employed Presumably these were their earlier cases, and doubtless their methods of drainage, like those of others, have improved with increased experience.—I am, Sir, yours faithfully,

WILLIAM PEARSON, F.R.C.S. Irel.,
Chichester, Dec. 24th, 1916. Major, R.A.M.C. (Temp.).

MOBILISATION OF THE MEDICAL PROFESSION.

To the Editor of THE LANCET.

SIR,—I do not propose to argue with either of your correspondents on this subject in your last issue, neither have I the intention of leading any "crusade." No doubt the number of medical practitioners required by the Government for war purposes must be obtained, and the only question at issue is, how is this to be done? The needs of the Government may be met in two ways: either by special legislation putting obligations on medical practitioners not shared by the rest of the community, or by general enactments binding on all British subjects. That is what our profession has to consider, and if your correspondents think there is nothing derogatory to the "honour and dignity" of the profession in the compulsory "deportation" of civilian doctors from their homes and practices—not to attend to soldiers, but to take charge of other practices—when it would be illegal to enforce such "deportation" in the case of other British subjects, I do not agree with them. It seems to me that "the honour and dignity of the profession" is very much implicated in upholding our rights, not only as medical practitioners, but as British subjects. We are as desirous to win the war as any class of the community, but we may fairly claim to be subject only to those laws that are binding on the rest of the nation, and I regret exceedingly that they consider it dishonourable to "protest strongly" against our profession being put outside the protection of the law relating to all other British subjects.

I am, Sir, yours faithfully,

Hackney-road, N.E., Dec. 23rd, 1916. MAJOR GREENWOOD.

Obituary.

THOMAS BARR, M.D., C.M.GLASG., F.F.P.S.GLASG.,

SURGEON, GLASGOW HOSPITAL FOR DISEASES OF EAR, NOSE, AND THROAT; LECTURER ON AURAL SURGERY, UNIVERSITY OF GLASGOW.

OF the numerous friends of Dr. Thomas Barr, of Glasgow, only a limited number were aware that he had been lying seriously ill at his residence during the past few weeks.

Thomas Barr was born at Elderslie, Renfrewshire, in 1846, and graduated as a Bachelor of Medicine and Master of Surgery, with highest honours, at Glasgow University in 1868, receiving in 1870 the M.D. degree. During the years 1865–67 he had the good fortune to study under Lister at a time when that great master was initiating the principles of antiseptic surgery, and on many occasions he was heard to say how mentally invigorated he had been by watching the evolution of Lister's laborious efforts.

After having been engaged in general practice for a period of nine years, Barr turned his attention to otology, and studied under such distinguished exponents of the art as Professors Politzer, Gruber, Schrötter, and Urbantschitsch in Vienna. He was duly appointed dispensary surgeon for diseases of the ear in the Glasgow Western Infirmary, a position which he held for 38 years. During this

long period he conducted with great regularity and success the classes on otology for the University students. In 1879 he was appointed lecturer on aural surgery in Anderson's College Medical School, a position he held for 16 years, when he was appointed lecturer on diseases of the ear in the University of Glasgow. In addition he held the post of honorary aurist to the Glasgow Sick Children's Hospital from 1879 (the date of the opening of this institution) until 1914, a period of 35 years. In 1884 he was appointed aural surgeon to the Glasgow Ear Hospital, now the Glasgow Hospital for Diseases of the Ear, Nose, and Throat, a post which he resigned only a short time ago. In 1895 the University of Glasgow instituted a lectureship on diseases of the ear, to which he was at once appointed and where he conducted large and successful classes. For a period, therefore, of nearly 40 years Barr regularly taught otology, keeping himself abreast of all the modern improvements and discoveries in this rapidly advancing branch of the healing art. His reputation as an aurist is evidenced from the fact that he acted as President of the Otological Section of the British Medical Association at its meeting in Glasgow in 1888, as President of the Otological Society of the United Kingdom during the years 1903–1905, as President of the Glasgow Pathological and Clinical Society in 1899–1901, and as President of the Scottish Otological and Laryngological Society at its meeting in Glasgow in 1911. He was one of the Vice-Presidents of the Otological Section of the International Medical Congress held in London in 1913. His most important literary work was his well-known "Manual of Diseases of the Ear for the Use of Students and Practitioners," the first edition being published in 1884 and the fourth in 1909. In the preparation of the last edition he was ably assisted by his only son, Dr J. Stoddart Barr, whose painful and prolonged illness was a great blow to the devoted father. Seldom, indeed, has it been given to father and son to have more cordial, sympathetic, and intimate interests in life.

"Possessed of a peculiarly lovable temperament," writes one of his personal friends, "Barr gathered around himself many friends, to whom he was an inspiration and a true helper in times of doubt and difficulty. His hearty handshake, his genial laugh, and his never-failing urbanity will long be remembered and cherished by those who had the privilege of his intimate friendship. Those who had the good fortune to know him this way will never forget his sunny disposition and his boyish enthusiasm, not only in things otological but in everything pertaining to the advancement of the profession to which he was so devotedly attached. Possessing, as he did, a kindly and domesticated nature, he was happy in his home and in his family circle, and there sought and found rest after his daily labours. By his death the profession have lost a large-hearted, generous, and wholly lovable colleague."

THE LATE MR. JOHN EWENS.—Mr. J. Ewens L.R.C.P. Lond., L.R.C.S. Edin., L.S.A., consulting surgeon to the Royal Hospital for Sick Children and Women, Bristol, died at his residence, at Clifton, on Dec. 14th, aged 86 years. The deceased received his medical education at St. George's Hospital; after qualifying he practised for a few years at Milton Abbas, Dorset, where he was on the honorary staff of the local cottage hospital. He then went to Bristol, where he was elected on the honorary surgical staff of the Children's Hospital. He practised for many years in Bristol and Clifton, but had retired for some time from active work. Mr. Ewens was held in high esteem, and by his death an old and much respected member of the medical profession has been removed from Bristol.

WE regret to announce the death, in his eightieth year, of Dr. James Little, Regius Professor of Physic in the University of Dublin and a past President of the Royal College of Physicians of Ireland.

LONDON SCHOOL OF TROPICAL MEDICINE.—The following candidates passed the examination of this school at the termination of the fifty-second session (October-December, 1916):—R. D. Sabnis, W. S. Sharpe (Lieutenant-Colonel, R.A.M.C.), L. D. Parsons (Ceylon Medical Service), G. H. Dart, Fred. Barretto, and H. E. Ekanayake (Ceylon Medical Service).

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue:—

Died of Wounds.

Capt. C. K. McKerrow, R.A.M.C., was educated at Charterhouse and at Cambridge, and qualified in 1908. After holding appointments at St. George's Hospital, London, and at the Women's Hospital, Vienna, he practised at Ayr, in Scotland, and joined the R.A.M.C. soon after the outbreak of war. He was promoted Captain in June of this year.

Lieut. E. Howe, R.A.M.C., graduated at Manchester University in 1909. He held an appointment at the Manchester Royal Infirmary, and afterwards was in practice at Hazel Grove, Stockport. He joined the R.A.M.C. in October last.

Wounded.

Capt. D. V. M. Adams, R.A.M.C., attached Gloucester Regiment.

Capt. W. D. Reid, R.A.M.C., attached Manchester Regiment.

Capt. C. M. Geddie, R.A.M.C., attached Gloucester Regiment.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war:—

Lieut. A. H. Cheetham, Duke of Wellington's Regiment, younger son of Dr. W. H. Cheetham, of Guiseley, Yorkshire, county medical officer of the North Riding.

Second Lieut. R. B. W. Vinter, M.C., Worcestershire Regiment, elder son of Capt. S. G. Vinter, R.A.M.C., of Torpoint, Cornwall.

Lieut. R. Underhill, Middlesex Regiment, eldest son of Dr. F. T. Underhill, medical officer of health, Vancouver, British Columbia.

Capt. C. K. McKerrow, R.A.M.C., eldest son of the late Dr. G. McKerrow, of Ayr, Scotland.

Lieut. J. M. T. Stock, East Lancashire Regiment, younger son of the late Lieut.-Col. J. N. Stock, R.A.M.C., formerly of Cheltenham.

THE HONOURS LIST.

THE following awards to medical officers are announced:—

Military Cross.

Temp. Capt. Walter Eustace Adam, R.A.M.C.

For conspicuous gallantry and devotion to duty. He displayed great courage and determination in dressing and evacuating wounded under heavy fire.

Temp. Capt. Henry St. Arnaud Agate, R.A.M.C.

For conspicuous gallantry and devotion to duty. He attended to men who had been buried under intense fire. On another occasion he dressed the wounded of two battalions, working continuously for 17 hours under fire.

Capt. Robert Burgess, R.A.M.C.

For conspicuous gallantry and devotion to duty. He worked at the advanced dressing-station continuously for 72 hours, exposing himself fearlessly, and, although wounded, refused to be relieved and remained at duty.

Capt. William Hunt, R.A.M.C.

For conspicuous gallantry and devotion to duty. He extinguished a fire in a bomb store at great personal risk, removing two boxes of burning bombs and undoubtedly saving many lives.

Temp. Lieut. John Woollaston Wayte, R.A.M.C.

For conspicuous gallantry and devotion to duty. He organised and led stretcher parties under intense fire. On several occasions he rescued wounded men in the open by carrying them on his back. He has previously done fine work.

Capt. George Garret Greer, Canadian A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded for two hours in the open under intense fire. Later, he worked continuously for 48 hours, and by his courage and devotion to duty was a splendid example to his men.

Bar to Military Cross.

Temp. Capt. David Duncan Craig, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended the wounded throughout the operations with great courage and skill, frequently passing through enemy barrages and going into the open. He set a splendid example. (The award of the Military Cross was recorded in THE LANCET of June 26th, 1915.)

Temp. Capt. Ivan Clarkson Maclean, M.C., R.A.M.C.

For conspicuous gallantry and devotion to duty. He tended and dressed the wounded continuously throughout the operations under very heavy fire, displaying great courage and determination. (The award of the Military Cross was recorded in THE LANCET of June 26th, 1915.)

Also the following for services in Mesopotamia:—

C.B.—Lieut.-Col. G. B. Irvine, I.M.S.
C.M.G.—Col. A. E. Tate, A.M.S.
C.I.E.—Major W. Gillitt, I.M.S.
Brevet-Col.—Lieut.-Col. (temp. Col.) D. J. Collins, R.A.M.C.
Brevet-Lieut.-Col.—Major J. H. Crossley, R.A.M.C.; Major J. G. Footer, R.A.M.C.; Major C. M. Goodbody, D.S.O., I.M.S.; Major J. H. Morton, D.S.O., I.M.S.
Brevet-Major.—Capt. F. T. Dowling, R.A.M.C.; Capt. T. J. Mitchell, R.A.M.C.
D.S.O.—Capt. W. H. Hamilton, I.M.S.; Capt. R. de S. B. Herrick, I.M.S.; Major R. Kelsall, I.M.S.; Temp. Capt. A. N. Minns, R.A.M.C.; Capt. R. Sweet, I.M.S.
Military Cross.—Temp. Capt. R. M. Allan, R.A.M.C.; Capt. D. V. C. FitzGerald, I.M.S.; Capt. H. L. Garson, R.A.M.C. (Spec. Res.); Capt. A. Glen, R.A.M.C. (Spec. Res.); Capt. E. S. Goss, I.M.S.; Capt. J. H. Hislop, I.M.S.; Temp. Lieut. W. G. MacDonald, R.A.M.C.; Capt. R. F. D. MacGregor, I.M.S.; Capt. W. H. O'Riordan, R.A.M.C.; Capt. D. H. Rai, I.M.S.; Capt. H. K. Rowntree, I.M.S.; Capt. Jyoti Lal Sen, I.M.S.; Temp. Lieut. Sundar Das Sondhi, I.M.S.; Temp. Lieut. J. B. Thackeray, R.A.M.C.

NEW MILITARY ORTHOPÆDIC CENTRE.

A movement is on foot to establish in Ireland another auxiliary hospital for the treatment of sailors and soldiers who have lost limbs. A committee for the purpose has been formed with the coöperation of Surgeon-General Ford, D.D.M.S., Irish Command, and H.R.H. the Duke of Connaught has consented to be patron. A suitable building has already been secured and submitted to structural alterations, and an appeal has been issued for funds.

THE COMMITTEE ON WAR DAMAGE.

On two occasions Mr. Asquith declined to receive deputations, the object of which would have been to obtain compensation out of national funds for damage inflicted in the United Kingdom by hostile aircraft or bombardment. The policy of the late Government was to encourage insurance, which the State undertook to conduct. This, however, was only designed to compensate for damage done to property, and left uncovered the risk of personal injury or loss of life, a risk affecting many who would be unlikely, or unable, to protect themselves by the payment of premiums.

An appeal for sympathetic treatment in this direction has now been raised by those who are interesting themselves in the effort to secure State compensation for all affected, whether in person or property. The Lord Mayor of York at a meeting at which the late Prime Minister's refusal to reopen the question was discussed, stated that the bodies asking for State compensation—the Committee on War Damage, combined with the Association of Municipal Corporations—after allowance for overlapping, represent 718 municipalities with a population of more than 28 millions, and whatever inference may be drawn from these figures, there appears to be a considerable body of public opinion in favour of the movement organised by the committee. Presumably, from the prominent support given by the municipalities, that body by no means intends to drop the question of loss inflicted upon property, while emphasising the hardship inflicted by the death or disablement of individuals. The memorial prepared for presentation to the late Prime Minister laid stress upon the example of France in paying compensation for all war damage, a liability with which that sought to be imposed upon our Government would hardly bear comparison. Leaving out the question of what should be done in the remote contingency of a hostile landing upon our shores, there is much to be said in the present circumstances in favour of a burden being borne by the State which falls with undeserved inequality upon those who live or happen to own property near to certain parts of our coasts. These are persons who might in the existing circumstances be reasonably expected to insure, but insurance in itself constitutes a heavy tax to pay for the accident of residence or local interests. Many, however, besides these have suffered from the visits of Zeppelins in districts which for some time were believed to be safe from such dangers either through their remoteness from the coast or through faith in the efficacy of defence measures which only recently have proved successful. Many, too, have sustained loss or personal injury through the dropping of bombs at random in inland rural districts, remote from military stations and from centres of industry connected with the preparation of war material. These can hardly be blamed for having neglected to insure against risks the possibility of which they did not realise. The matter, however, would appear to be one in which weight may well be given to public opinion, particularly if it is voiced by responsible persons who can establish their right to represent their fellows.

ROYAL VISIT TO THE WOUNDED.—On the afternoon of Christmas Day the King and Queen, accompanied by Princess Mary, Prince George, and Prince Henry, visited the King George Hospital in Stamford-street, where there are over 1600 wounded soldiers, all of whom were personally greeted by one of the Royal party, and received at their hands a copy of Queen Mary's Gift Book. Queen Alexandra paid a visit to the hospital at Millbank which bears her name.

Medical News.

UNIVERSITY OF DUBLIN, TRINITY COLLEGE, SCHOOL OF PHYSIC.—At examinations held recently the following candidates were successful:—

PRELIMINARY SCIENTIFIC EXAMINATION.

Botany and Zoology.—Mervyn Edmund McBrien, Mary Horan, William Theodore Micks, and George Cyril Brereton Robinson.
Chemistry.—Joseph Eugene Deane (high marks), Eileen Hilda Dowse (high marks), William Theodore Micks, Elsie Anna Burns, Mervyn Edmund McBrien, George Ernest Sainsbury, Edward Hazlett Fraser, Charles John de Vere Shortt, Patrick Joseph Healy, Frederick Wynand Pienaar, Robert Young Crichton, Henry Ignatius Emmet Powell, Nora Griffith, Joseph Hirschmann, Mary Horan, and Cecil Samuel Wilson.
Physics.—George Ernest Sainsbury, Henry Ignatius Emmet Powell, George Cyril Brereton Robinson, and David Samuel Thomson.

INTERMEDIATE MEDICAL EXAMINATION, PART I.

Anatomy and Physiology and Histology.—John Farnsworth Sheppard, Gertrude Rice, Gerald Fitzmaurice Keatinge, Athanas Blagoff, Jessie Gilbert, and Richard Dominic Murphy (Anatomy, completing examination).

INTERMEDIATE MEDICAL EXAMINATION, PART II.

Applied Anatomy and Applied Physiology.—William Bruce Briggs, M.A.

FINAL MEDICAL EXAMINATION, PART I.

Medical Jurisprudence and Hygiene, Materia Medica and Therapeutics, Pathology.—Harry Lee Parker (high marks), Patrick Bernard Moloney (high marks), Lindley Albertyn, Stanley Cyril Mitchell, James Michael Hill, Ernest Edward Rollins, Wilfred Vincent Pellissier, William Sweetman, Pieter Johannes Swanepoel, Percival Atkins Dormer, Frederick Gill, Joseph Posner, Rita Henry, Gilbert Marshall, Jason Grant Bird, Thomas Hugh Robinson McKiernan, William Alfred Shannon (omitting Pathology), and Eric Reginald Tivy (omitting Pathology).

FINAL MEDICAL EXAMINATION, PART II.

M.B., Medicine.—John Philip Macnamara, Clotilda Bayne Bevis, Joseph Godfrey Bird, Thomas Paul Chapman, Edward Parker, Michiel Christoffel Dippenaar, and John James Keatley.
B.Ch., Surgery.—Clotilda Bayne Bevis (high marks), Frederick Joseph Smith (high marks), William Frederick Wicht, Patrick Rock, Alan Francis Grimbly, William Garde-Browne, John Philip Macnamara, Edward Parker, Gilbert Marshall, Henry Stephen Campion, John Thorp Westby, and Thomas Galvin Roche.
B.A.O., Midwifery and Gynæcology.—William Petrus Lubbe, Andrew Hope Davidson, Meta Grace Jackson, Michiel Christoffel Dippenaar, Henry James Rice, Sidney Alfred Clark, James Arthur William Cullen, Fleetwood William Porter Sullivan, Thomas Edward Hill, Harry Banks, Pieter Johannes Swanepoel, Alan Glynn Wright, William Joseph Hamilton, and William James McClintock.

DIPLOMA IN PUBLIC HEALTH. PART II.

George Edward Palmer, M.R.C.S., L.R.C.P.

PRELIMINARY SCIENTIFIC (DENTAL).

Physics.—Ethel Maud Merrin.

FINAL DENTAL EXAMINATION, B. DENT. SC.

William Burleigh Parr (high marks), Maurice Louis Counihan, and Charles Henry Herbert.

ROYAL COLLEGE OF SURGEONS OF ENGLAND.—A special meeting of the Council was held on Dec. 22nd, Sir W. Watson Cheyne, the President, being in the chair. The secretary reported the death of Sir Frederic Eve, who was a member of the Council, a former vice-president, and a former member of the Court of Examiners of the College. He was also a lieutenant-colonel in the Royal Army Medical Corps. A vote of condolence was passed to be sent to Lady Eve and the members of his family. It was stated that the vacancy on the Council occasioned by the death of Sir Frederic Eve would be filled at the meeting of Fellows of the College in July next. Mr. Bilton Pollard was appointed a member of the Committee of Management. The President reported that the term of office of Mr. James Ernest Lane on the Court of Examiners would expire in February, and that the vacancy so occasioned would be filled at the February meeting of the Council. Mr. Lane will not apply for re-election.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on Dec. 20th Mr. Dodballapur Sivappa Puttanna, having passed the requisite examinations, was admitted a Fellow.

THE PROFESSIONAL CLASSES WAR RELIEF FUND.—This fund has already dealt with a large number of cases of distress among the women and children of the professional classes who have suffered most from the war. The education of children, the training for suitable careers of youths and girls, and the provision of maternity homes for wives of professional men who are serving their country, are the three chief branches of the work of the Council which administers the fund. This Council represents all the great professional bodies, and is now appealing for further funds to carry on its work. Sir William Dunn, the Lord Mayor of London, as President of the Council, will receive subscriptions at 13, Prince's Gate, London, S.W.

Parliamentary Intelligence.

NOTES ON CURRENT TOPICS.

End of Parliamentary Session.

PARLIAMENT was prorogued on Friday, Dec. 22nd. The new session will begin on Wednesday, Feb. 7th. The King's Speech dealt entirely with the war. "The vigorous prosecution of the war," it said, "must be our single endeavour until we have vindicated the rights so ruthlessly violated by our enemies and established the security of Europe on a sure foundation."

HOUSE OF COMMONS.

THURSDAY, DEC. 21ST.

Licences for Experiments on Living Animals.

Sir G. GREENWOOD asked the Home Secretary whether the two alien enemies whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals had now been interned and, if so, at what date; and, if not, whether they still held such licences.—Sir G. CAVE said in reply: One of the two persons mentioned left the country in April, 1915, and his licence was revoked. The other, who is of Polish birth, was exempted from internment on the recommendation of the Advisory Committee, and still holds a licence under the Act.

Sir G. GREENWOOD asked whether the Germans, said to have been naturalised in this country, whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals, still held such licences; and, if so, what certificates, if any, did they respectively hold.—Sir G. CAVE answered: Two licences are now held by persons of German origin naturalised in this country. One of them has an A certificate and the other has two A certificates and an E.

Sir G. GREENWOOD asked whether the 16 Japanese subjects whose names appeared in the Annual Returns for 1915 as holding licences to perform experiments upon living animals, or any of them, still held such licences; if so, what certificates, if any, did they respectively hold; and whether he would consider the desirability of confining such licences to British citizens.—Sir G. CAVE replied: Of the 16 Japanese subjects mentioned, 13 have given up their licences, having completed their experiments. Of the remaining three, one holds no certificates, one holds Certificate A only, and the third, a staff surgeon of the Japanese Navy, holds two A certificates, two B certificates, one E, and one EE. I am not aware of any grounds for altering the established practice with regard to the grant of licences to other than British subjects on special conditions. I may point out that this matter was considered by the Royal Commission, who expressed approval of the arrangements adopted by the Home Office in regard to it.

Surgical Appliances for Wounded Soldiers.

Mr. H. LAW asked the Financial Secretary to the War Office whether he was aware that certain of the surgical appliances issued to wounded soldiers in this country and in Ireland were inferior to those supplied in similar cases by the governments of the Dominions; and whether steps would be taken to level up the quality of such appliances to the Colonial standard.—Mr. FORSTER replied: I am not aware that wounded soldiers in this country and Ireland are supplied with surgical appliances inferior to those supplied by the Dominion governments.

FRIDAY, DEC. 22ND.

Medical Reinforcements.

Answering Mr. WATT, Mr. MACPHERSON said: As all the forces overseas have been fully supplied with medical units, there is at the moment only occasion to send individuals as reinforcements.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).
When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

ABERGAVENNY, MONMOUTH COUNTY ASYLUM.—Temporary Assistant Medical Officer. Salary £7 7s. per week, with board, &c.

BARNET, CLARE HALL SANATORIUM FOR PULMONARY TUBERCULOSIS, South Mimms, near Barnet.—Assistant Medical Superintendent.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with board, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Also Female Third House Surgeon. Salaries £200 and £180 per annum, respectively, with board, &c.

BOLTON UNION, FISHPOOL INSTITUTION, Farnworth, near Bolton.—Resident Assistant Medical Officer. Salary £383 5s. per annum, with rations, &c.

BOURNEMOUTH, ROYAL VICTORIA AND WEST HANTS HOSPITAL.—House Surgeon, unmarried, for six months. Salary £200 per annum, with board, &c.

BRIDGWATER HOSPITAL.—House Surgeon. Salary £120 per annum, with board, &c.

BRISTOL GENERAL HOSPITAL.—House Surgeon. Salary at rate of £175 per annum, with board, &c.

BUXTON, DERBYSHIRE, DEVONSHIRE HOSPITAL.—Assistant House Physician. Salary £100 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—Fourth-Year Student Dresser for three months. Salary at rate of 52 guineas per annum, with board, &c.

CHELSEA HOSPITAL FOR WOMEN, Arthur-street, Chelsea, S.W.—House Surgeon, unmarried. Salary £80 per annum.

ECCLESALL BIERLOW UNION INFIRMARY.—Resident Assistant Medical Officer. Salary £250 per annum, with board, &c.

HARROGATE INFIRMARY.—Resident House Surgeon.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, London, W.C.—House Surgeons, Assistant Casualty Medical Officer, and House Physician, unmarried. Salary at rate of £60 per annum each, with board, &c.

LEDBURY UNION, BOSBURY DISTRICT.—Medical Officer. Salary £75 per annum.

LEEDS CITY HOSPITALS FOR INFECTIOUS DISEASES AND TUBERCULOSIS.—Assistant Medical Officer. Salary at rate of £250 per annum, with board, &c.

LEICESTER CORPORATION.—Female Second Resident Medical Officer for Isolation Hospital and Sanatorium, Groby-road. Salary at rate of £250 per annum, with board, &c.

LONDON HOMŒOPATHIC HOSPITAL, Great Ormond-street, London, W.C.—Two Resident Medical Officers. Salary £80 per annum, with board, &c.

METROPOLITAN HOSPITAL, Kingsland-road, N.E.—Resident Medical Officers. Salary at rate of £150 to £200 per annum, with board, &c.

MIDDLESBROUGH, NORTH ORMESBY HOSPITAL.—Assistant House Surgeon. Salary £150 per annum, with board, &c.; if a Senior Student, salary £100 per annum.

NORTHAMPTONSHIRE WAR HOSPITAL.—Resident Medical Officer. Salary £1 per day, with board, &c.

NOTTINGHAM AND MIDLAND EYE INFIRMARY.—Female House Surgeon.

QUEEN'S HOSPITAL FOR CHILDREN, Hackney-road, Bethnal Green, E.—House Physician and House Surgeon for six months. Salary £100 per annum, with board, &c. Also Temporary Assistant Physician.

ROYAL NATIONAL ORTHOPÆDIC HOSPITAL, 234, Great Portland-street, W.—Resident Surgical Officer.

SUNDERLAND, COUNTY BOROUGH EDUCATION COMMITTEE.—Temporary Female School Medical Officer. Salary £300 per annum.

VENTNOR, ISLE OF WIGHT, ROYAL NATIONAL HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST ON THE SEPARATE PRINCIPLE.—Assistant Resident Medical Officer.

Births, Marriages, and Deaths.

BIRTHS.

BECHER.—On May 21st, at Thornwood, London, Ontario, the widow of Major Archibald Becher, R.A.M.C., Canadian Infantry—a son.

BLACK.—On Dec. 17th, at Newton Cottage, Alverstoke, Hants, the wife of Staff Surgeon F. G. H. R. Black, R.N.—a daughter.

HOWELL.—On Dec. 22nd, at Harley-street, W., the wife of C. M. Hinds Howell, M.D., F.R.C.P., of a son.

MARRIAGES.

YOUNGER—ABDY.—On Dec. 16th, at St. Bartholomew's Church, Gray's Inn-road, W.C., by the Lord Bishop of Willesden, assisted by the Rev. W. P. Cromie, M.A., R.D. (uncle of the bride), George Cuthbert Nelson, L.R.C.P. Lond., M.R.C.S. Eng., of Bovey Tracey, South Devon, only surviving child of E. G. Younger, M.D., M.R.C.P., D.P.H., and Mrs. Younger, of 2, Mecklenburgh-square, W.C., to Lilian Elizabeth, second daughter of the Rev. H. H. and Mrs. Abdy, of St. Bartholomew's Vicarage, W.C.

DEATHS.

BLANDFORD.—On Dec. 23rd, at The Manor, Norton, Stockton-on-Tees, Dr. J. W. Blandford, J.P., Hon. Colonel, R.A.M.C., aged 69.

FREER.—On Dec. 21st, at Hill Ridware, John Henry Freer, L.R.C.P., M.R.C.S., late of Rugeley, in his 80th year.

GELSTON.—On Dec. 24th, in London, John Seymour Gelston, L.R.C.P.I., L.R.C.S.I., of Ixworth House, Ixworth, Suffolk.

LITTLE.—On Dec. 23rd, at his residence, St. Stephen's Green, Dublin, James Little, M.D., Regius Professor of Physic, Dublin University, in his 80th year.

MCKERROW.—On Dec. 20th, of wounds, Charles Kenneth McKerrow, M.A., M.B., B.C., M.R.C.S., L.R.C.P., Captain R.A.M.C.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

THE MEDICAL PROFESSION IN NORWAY IN 1816.

IN a brief but interesting account of the position of medical and surgical practitioners in Norway a hundred years ago Dr. M. Söegaard gives a reproduction of the first official list of those then authorised to practise in that country. The list was issued by the Third Department of the Government and is dated Feb. 20th, 1816. The first thing that strikes the reader is its brevity; it contains no more than a hundred names. Norway was one of the countries that had the misfortune to back the losers in the Napoleonic wars. In 1800 the Danish Government, the predominant partner in the union of Denmark and Norway then existing, committed the Norwegians to the second armed neutrality. When this was broken up by the bombardment of Copenhagen, Denmark and Norway supported Napoleon against both England and Sweden in 1807. Rapid economic ruin was the result, and in 1814 Frederick VI. of Denmark ceded Norway to Sweden. Sweden had previously joined the Allies against Napoleon; the Act of Union made Sweden and Norway equally independent countries, bound together under a single king in an offensive and defensive alliance, which survived till 1905. To return to the year 1816, it may be said that the economic condition of Norway was then deplorable; trade was bad, there was much general poverty, the country was bankrupt. The population numbered something over 900,000 souls, yet, as Dr. Söegaard proves by quotations from letters written by medical men at the time, many of them found it hard to earn even a livelihood. "How I shall get on this year and in the future," writes Chief Surgeon Bencke, of Fredriksvaern, "I do not know; my time is stolen from me, I am a slave from morning till night. My pay is about 64 skillings a day. ..... I do not even know the name of civil practice here." The skilling was worth nearly a halfpenny. Two medical men practised in the town of Stavanger; the senior of these, Landphysicus (or chief district physician) Fangel, writes of his junior, the assistant physician, "he is so good in helping the poor that with my whole heart I wish this brave man an old age free from crushing anxiety about his daily bread, for the hundred rigsbankdaler he gets as assistant at the hospital barely supply the first necessities of life." The rigsbankdaler or rixdollar of 96 skillings was worth less than four shillings; clearly this assistant was not one of those passing rich on (nearly) twenty pounds a year. It is not surprising to read that when Chief Naval Surgeon Heiberg won a large sum of money in the Hamburg lottery of 1814 he hastened to throw up his practice and go into business as a shipowner and wholesale merchant. But in 1828, alas, he failed, and had to return to his old profession as regimental surgeon at Horten. Here, "separated from his family, he lived in a very small way until he was appointed district doctor at Tönset." Clearly the hundred medical men practising in Norway in 1816 had a hard time of it. Yet few and ill paid as they were they all had official titles, many of them titles as magnificent as apparently empty of all save credit and renown. Most of these titles had to do with surgery, and at least a dozen varieties of surgeons are distinguished in the official list of 1816. Twenty-seven of the hundred practitioners it contains are described as "uexaminerede Bataillonschirurger," battalion surgeons who had not presented themselves—or who had not successfully presented themselves?—for examination. Seventeen are regimental surgeons, 11 are district surgeons, 6 are candidates in surgery. Others are set down as town surgeons, mine surgeons, senior surgeons, under surgeons, company surgeons, battalion surgeons, divisional surgeons, supernumerary regimental or battalion surgeons, or town and district surgeons. The mere physicians are fewer than the surgeons in the list, but enjoy a no less copious and perplexing variety of titles. Two are described as doctors of medicine, though 11 others are mentioned as holding the degree of Dr. Med.: one is a doctor of both medicine and surgery, and 6 are described as "Landphysici," or head physicians of their districts. A seventh "Landphysicus" is set down as also a medical candidate, as though not fully qualified, while an eighth is described as "Bergmedicus" (or mine medico) as well as "Landphysicus," though the distinction between the capacities of a "medicus" and a "physicus" is not at once apparent. Apart from the doctors of medicine, the "medici," and the "physici," come practitioners of a fourth description, those set down in Norwegian as "Laeger," or, in English, leeches. The leeches existed in various capacities, and are distinguished as leeches, practising leeches (what did a leech do if he did not practise?), works leeches, infirmary leeches, private leeches, district leeches, under leeches, and Lazareth leeches. Finally, there may be mentioned two practitioners described as medical candidates, comparable in status to the surgical candidates, no doubt. One of these medical candidates was also professor of botany at Christiania; the other was also a private leech. The Lazareth leech was in practice at Larvik, and is described in the list as a surgical candidate and "physicus" as well. His Lazareth or lazaretto may have been either a fever hospital or a hospital for lepers, but it may be added that special provision was made for leprosy in Norway by the appointment of an "unexamined assistant" at the Stavanger *Radesygehus*, or home for lepers, and a "Titular Professor," who was also "chief inspector for leprosy," at Tönsberg. Yet another professional title may be mentioned, if only for its grim sincerity. At Vinger there practised a "Forhenvaerende Regiments Feltskjaer," or ex-regimental field shearer, to give a literal translation of his official title, as though the surgery on the field of battle had consisted mainly of immediate amputations.

VACCINATION ON THE FOOT.

To the Editor of THE LANCET.

SIR,—I shall be glad if any of your readers can give me the particulars and results of vaccination *on the foot*.

I am, Sir, yours faithfully,

JAMES MARSH, M.B.Edin.

114, High-street, Atherton, near Manchester, Dec. 22nd, 1916.

LETTS'S "QUIKREF" DIARIES.

WE have received some specimens of the diaries published by Messrs. Cassell and Co. under the above title. The list includes books for the office, the study, the counter, and the pocket, the sizes varying accordingly, and the bindings from leather through the various forms of cloth to paper. The prices are from 1*s.* to 16*s.* An accident insurance coupon accompanies each diary. For medical men a diary 7 in. by 3¼ in. is provided, showing a week at an opening of two pages and ruled with columns for the insertion of visits to 54 patients. Bound in cloth, with pencil, the price is 2*s.* 6*d.*, or in French morocco, with tuck and two pockets, 5*s.* There are intermediate prices according to style of binding. An excellent diary for nurses, price 2*s.* 6*d.*, bound in red leather cloth, contains, in addition to the usual almanac, spaces ruled for nurses' reports of the patients' progress and an index. The diary shows a week in an opening.

At a season for exchanging gifts, when necessary economy and generosity are likely to clash, a diary may solve the difficulty. All the above-mentioned books are printed on good tough paper and bound with an eye to hard wear.

PUBLIC HEALTH AND VITAL STATISTICS OF CYPRUS.

ACCORDING to the Cyprus Blue-book for the year 1915 the estimated population of the colony is 294,664. In 1915 there were 9141 births, the rate being 31 per 1000; the number of deaths returned was 5473, or 18·5 per 1000. The public health and general sanitary condition of the island have been satisfactory; there was complete immunity from plague and cholera, and no severe quarantine restrictions were imposed. The number of cases of typhoid fever, which in Cyprus is generally of a mild type, was 267, as compared with 341 in 1914. On the other hand, 11 cases terminated fatally, as against 8 in the previous year. There were 9 cases of diphtheria with 6 deaths, but only 6 cases of cerebro-spinal meningitis (5 deaths). 6701 vaccinations were performed during the year, and there was no case of small-pox.

This is the third year of the campaign against malaria initiated by Sir Ronald Ross in 1913, and it is satisfactory that the reduction in the cases of malaria and the spleen-rates is considerable. There were 2083 cases less than in the previous year, and the spleen-rate, which was returned at 22·8 per cent. in the spring of 1913, has now fallen to 11·5 per cent. The reduction is fairly evenly distributed over the island, but the greatest decrease is shown in the Larnaca and Famagusta districts, which were also the most malarial, and this is due in great measure to the extensive drainage works that have been carried out. The cases of malaria admitted to the six district hospitals in 1915 amounted to 167, of which only 6, or 3·5 per cent., terminated fatally.

Further work in improving the Nicosia General Hospital, a Government institution, has been carried out. The electric light installation is now complete, and an X ray apparatus has been provided. Two separate wards for dealing with septic cases in the women's side of the hospital have been built. The number of beds remains at 53. A total of 1196 patients received treatment in the wards of the institution during the

year and there were 59 deaths. 6881 persons obtained treatment in the out-patient department. The district hospitals of Larnaca, Limasol, Famagusta, Paphos, and Kyrenia have continued to carry out their valuable work; the total number of in-patients during the year was 1278 and of out-patients 12,303. There were only 5 admissions to the leper farm, as against 12 in 1914, and there were 10 deaths. The number of cases living in the farm at the close of the year was 92, the lowest on record in the present century.

It is recorded that the island has been in use by the military authorities as a convalescent resort. There have been constant arrivals and departures of convalescents from Egypt and elsewhere, and the benefit they derived from the salubrious climate has been considerable. The absolute mean temperature for the year was 66·48° F., as against 65·21° in the previous year. The mean rainfall was 16·12 inches, as against 23·49 inches during 1914, and an average of 21·89 inches during the last ten years.

MILK IN THE REARING OF INFANTS.

To the Editor of THE LANCET.

SIR,—Will any of your readers kindly inform me what should be done in the rearing of infants when milk cannot be taken? The child in question is now 15 months old and refuses milk in any form; if pushed she retches.

I am, Sir, yours faithfully,

Dec. 26th, 1916. M.D., M.R.C.P.

One of Them.—We understand that the arrangement of local collectors for Epsom College has not been discontinued. In numerous districts, however, the honorary local secretaries are engaged on military duties, and at their request the central office is looking after the local subscriptions. New collectors will, we are informed, be welcomed in districts where the College is not already represented.

Medical Diary for the ensuing Week.

SOCIETIES.

RÖNTGEN SOCIETY, Institution of Electrical Engineers, Victoria Embankment, W.C.

TUESDAY.—8.15 P.M., General Meeting. Paper:—Mr. C. A. Schunk: A Spectroscopic Investigation of Some Sources of Ultra-Violet Radiation in Relation to Treatment by Ultra-Violet Rays.—Dr. Batten will describe a Simple Cross-thread Frame for Use in Localisation.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH-EAST LONDON POST-GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. B. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out patients (Dr. T. R Whipham); Eye Out-patients (Mr. R. P Brooks), Skin Out-patients (Dr. H. W. Barber). 5.30 P M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

ROYAL INSTITUTION OF GREAT BRITAIN, Albemarle-street, Piccadilly, W

Christmas Lectures:—The Human Machine which All must Work (adapted to a Juvenile Auditory).

TUESDAY.—Prof. A. Keith: Living Pumps.
THURSDAY.—Prof. A. Keith: Living Bellows.
SATURDAY.—Prof. A. Keith: Living Workshops.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

ALTERATION IN THE PRICE OF "THE LANCET."

INCREASED war expenses and cost of production necessitate an increase of the price of THE LANCET. Commencing with the first issue in the New Year, the price will be 8*d.* instead of 6*d.* The rates of subscription will remain as revised in October.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

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THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given on page 4.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the rates shown, whatever be the weight of any of the copies so supplied.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Dec. 27th, 1916.

Date.	Rain-fall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Tem.	Wet Bulb.	Dry Bulb.	Remarks.
Dec. 21	...	51	50	36	42	42	Raining
,, 22	0·39	48	46	39	40	41	Overcast
,, 23	0·35	43	42	4·	43	43	Raining
,, 24	0·47	47	46	36	37	38	Fine
,, 25	...	44	43	33	34	35	Raining
,, 26	...	38	33	32	32	32	Foggy
,, 27	...	34	34	29	31	31	Foggy

Other information which we have been accustomed to give in these "Readings" is withheld for the period of the war.

The following journals, magazines, &c., have been received:—Proceedings of the Royal Society of Medicine, Medical Times, British Journal of Dental Science, Military Surgeon, Canadian Practitioner and Review, Liverpool Medico-Chirurgical Journal, Archives of Radiology and Electrotherapy, Annali d' Igiene, Annales de l'Institut Pasteur, Surgery, Gynecology, and Obstetrics, Tropical Diseases Bulletin.

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Letters, each with enclosure, are also acknowledged from—

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